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Expanding Offsite Construction Technologies

Housing & Urban Development (HUD) Grant Application

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Exhibit A Executive Summary / Metropolitan Area Planning Council



Expanding Offsite Construction Technologies

Housing & Urban Development (HUD) Grant Application

Pathways to Removing Obstacles to Housing (PRO Housing) Grant Program

Exhibit A Executive Summary

The Metropolitan Area Planning Council (MAPC), Greater Boston's regional planning agency is partnering with the City of Boston, with other municipalities anticipated to join if the grant is awarded, and others in the housing field to advance the following proposal to HUD to address the severe shortage of both market-rate and affordable housing that exists in our region. We are committed to doing so through a mechanism that will create quality jobs in the housing construction field, with livable wages, benefits, and worker protections. The Commonwealth of Massachusetts, MAPC, and the participating local governments are all actively working to address our region's housing needs, but the problem is too large to solve with one silver-bullet strategy or by one individual entity. Greater Boston desperately needs to pick up the pace of housing production, especially housing that is affordable to low and moderate-income households. New housing also needs to be resilient, energy-efficient, and located in areas with good transit access so residents can easily get to jobs, services, schools, and amenities.

This grant proposal addresses Greater Boston's housing needs by seeking to reduce several significant barriers to the production of new housing units in our region, the foremost of which is high construction costs. Offsite housing construction is a well-proven way to reduce construction costs and timelines while maintaining the highest quality standards and often increasing energy efficiency due to the controlled environment of a manufacturing facility. Increasing offsite construction can also reduce two other key barriers to housing production: the time it takes to construct new housing and local opposition to new construction projects. With our partners, we have carefully constructed a regional approach to research and incentivize innovative offsite construction methods on strategically located sites to reduce these barriers to the production of housing that is naturally affordable or includes deed-restricted affordability. We recognize that traditional on-site wood and steel frame construction is a vital part of our construction industry and produces quality homes, particularly high-density, high-rise housing developments. We see an opportunity to complement these on-site construction projects, underway and planned throughout the region, by supporting the use of offsite construction methods with a focus on deed-restricted affordable projects of various sizes and scales and smaller, infill housing developments whose small scale often makes feasibility a challenge, including single-family, duplexes, townhomes, and small multi-family structures. By diversifying our construction methods and exploring offsite methods regionwide, we are confident that we can more quickly meet our housing and climate goals, while also creating a greater diversity of good jobs with good wages and benefits in the construction field.

Research that informed this proposal, which included extensive engagement with subject matter experts and stakeholders, highlighted that one of the greatest barriers to the widespread use of offsite construction in Greater Boston is the lack of a manufacturing facility within 50 miles of Boston. Without a local facility, those who are developing with modular units are often not reaping the associated cost benefits because of the added transportation and logistical costs.

To attract a large manufacturing facility to the region, there must be sufficient demand. Based on our research, the optimal pipeline needed to support a large manufacturing facility is approximately a minimum of 1,000 housing units per year for at least three years. The acute demand for new housing units, especially affordable housing units, in our region is great enough to achieve this required demand, but it cannot be achieved by one municipality alone, hence the need for a regional approach. If awarded these funds, our goal is to support construction of a new manufacturing facility and produce the first units of affordable modular housing by the close of 2030.

As this proposal was developed, the project team engaged labor representatives and heard hesitancy around expanding offsite construction, as it is viewed as having potential to supplant on-site construction-related jobs. An important aspect of this proposal addresses the concerns voiced by labor representatives. Part of the grant activities are aimed at exploring and securing workforce requirements expected of any offsite construction methods. MAPC and its municipalities are committed to working with statewide and local labor organizations and their members to continuing conversations to understand the nuances of the construction industry and to ensure that offsite construction will create new jobs with good benefits for more residents of Greater Boston. Through the project's Working Group and sub-groups, MAPC will work with labor representatives to understand how offsite construction jobs can complement on-site construction jobs to improve the overall construction industry and result in quicker, but still high-quality and durable, housing development. Research activities will explore how labor agreements and other components of any solicitation¹ for a new facility can ensure the jobs created meet local labor standards and offer new opportunities for women and minority workers. We are excited to continue learning from offsite construction facilities elsewhere in the country, where workers have been unionized or labor agreements have been leveraged to create a highly skilled workforce with good wages, benefits, and protections. We envision this project setting a new precedent for how offsite construction can provide quality jobs and continue to work hand-in-hand with onsite construction methods. To fully address the region, and nation's, housing shortage, we need to embrace and continue to improve all construction technologies. We are confident we can contribute to this effort, while also staying true to Greater Boston's commitment of creating high quality jobs for our residents.

Anticipated Project Partners

The proposal has been developed with the primary municipal grant partner, the City of Boston, playing a central role. In crafting this proposal, MAPC has engaged with a range of cities and towns in the region that share a commitment to advancing housing goals. These communities are

¹ A solicitation could take the shape of a Notice of Funding Opportunity (NOFO) or Request for Proposals (RFP), two legal documents that often are employed by public agencies to enter into public/private partnerships or agreements.

active members of the Metro Mayors Coalition Housing Task Force, and they include Arlington, Cambridge, Chelsea, Everett, Newton, Somerville, and Watertown.

At the time of application submission, these municipalities have expressed their interest in participating in the project, with the cities of Boston, Everett and Newton providing letters of support ahead of the grant deadline. While specific details of other communities' involvement were not finalized within the application period, MAPC is in close collaboration with these communities. We are eagerly anticipating further municipal outreach efforts to secure a diverse group of participating cities and towns. This collaborative approach aims to collectively advance offsite construction initiatives, making it more regionally inclusive and comprehensive.

Exhibit B Threshold Requirements / Metropolitan Area Planning Council



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Exhibit B Threshold Requirements and Other Submission Requirements

MAPC is eligible to apply for this grant as a multijurisdictional entity. MAPC is a regional planning agency created under Massachusetts General Law Chapter 40B Section 24. MAPC has 101 member cities and towns and is governed by representatives from each city and town in the region, as well as gubernatorial appointees and designees of major public agencies.

Threshold Eligibility Requirements, pursuant to Section III.D

1. MAPC does not have any outstanding civil rights matters.
2. MAPC is submitting this grant proposal by the deadline via Grants.gov.
3. MAPC, as a multijurisdictional entity, is an eligible applicant under Section III.A.
4. MAPC is only submitting one application under this grant funding opportunity.

Exhibit C Need / Metropolitan Area Planning Council



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Exhibit C Need

Taking Action to Address Housing Need

Massachusetts, MAPC, and the region's 101 cities and towns have strong track records of pioneering the adoption of progressive housing policies and budgetary actions to support the creation and preservation of affordable housing. At all levels of government, a multitude of housing tools and strategies have been employed successfully. As a result, Massachusetts has a significantly larger share of subsidized or affordable housing than other states and continues to increase this segment of the housing stock more rapidly than other states and regions. MAPC works with cities and towns to locate affordable housing in high opportunity areas to advance racial and social equity. A sampling of select state, regional, and local housing actions are described below.

State Housing Actions

State Adoption of Chapter 40B

In 1969, Massachusetts adopted [Chapter 40B](#), providing relief from exclusionary zoning practices that prevented the construction of low- and moderate-income housing, particularly in suburban municipalities. The statute provides developers with an expedited approval process for projects that contain housing units affordable to households earning below 80% of AMI, as well as a State appeals process that may be used if a local zoning board denies the application. Chapter 40B has been revised and updated numerous times since its passage to increase its efficacy. Since its inception, Chapter 40B has had a significant impact on the production of affordable and market rate housing. As of 2023, two-thirds of all Massachusetts cities and towns (234 of 351) had over five percent of their housing stock affordable, including many in affluent suburbs with highly rated public schools. Nearly a quarter of cities and towns (81 of 351) have over 10 percent of their housing stock affordable. Only 45 jurisdictions have no affordable units, but these are mostly smaller, rural towns with overall lower housing costs.

Community Preservation Act

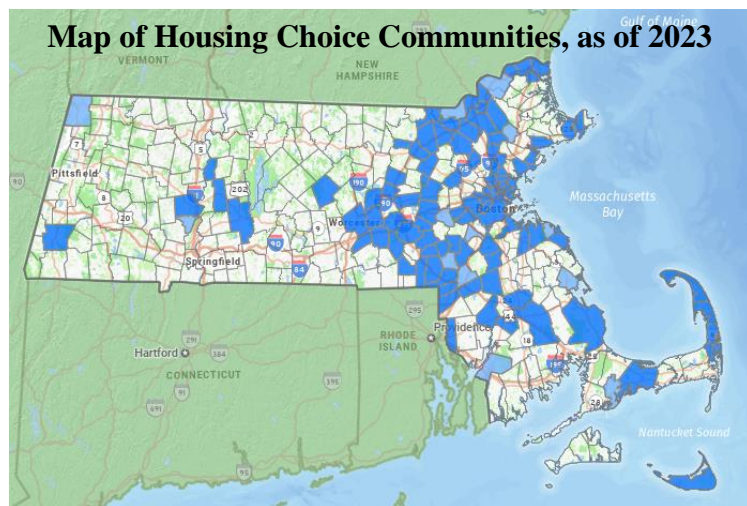
In 2000, Massachusetts passed the [Community Preservation Act](#) that allows cities and towns to conduct a referendum to add a small surcharge on local property taxes. The local surcharge is matched by a statewide Community Preservation Trust Fund. The funds gathered can be used to support local affordable housing development, among other things (like parks and recreation,

open space protection, and historic preservation). At least 10% of funds must go to affordable housing annually, but many communities allocate more than this. Since the passage of the Community Preservation Act, 195 communities have adopted the local surcharge, which has contributed to the creation of over 10,000 new affordable homes statewide. This is an excellent dedicated source of revenue that cities and towns can leverage to produce new and preserve existing affordable housing.

Housing Choice Initiative and Legislation

In 2019, Massachusetts established the [Housing Choice Initiative](#) designation program, which rewards cities and towns for producing new housing and adopting best practices to promote sustainable housing development. Housing choice designation provides exclusive access to Housing Choice capital grants to fund capital projects, often needed to support infrastructure needs related to growth. Housing Choice communities also receive bonus points or other considerations for a number of other Commonwealth funding programs. Municipalities are eligible for designation if they have had greater than 5% housing growth or over 500 new units built over the last five years, or if they have had 3% housing growth or over 300 new units built in the last five years plus have adopted five out of the 11 housing best practices. Currently, 95 cities and towns in Massachusetts have achieved this designation, exhibiting the state's commitment across varying communities to addressing housing need.

In 2021, through an Economic Development Bond Bill (H. 5250), Massachusetts amended the state's zoning act to institute three major changes: 1) eliminate the 2/3 majority vote for certain zoning changes related to housing production; 2) multi-family zoning requirement for MBTA municipalities (detailed further in the next section); and 3) changes to streamline permitting and discourage meritless legal challenges. The change from supermajority to simple majority voting is critical to lower the barrier of local opposition to affordable housing.



Amendment to State Zoning Act to add Section 3A, Multi-Family Zoning Mandate

[Multi-family zoning requirements](#) were enacted in 2021 as part of the aforementioned Housing Choice legislation, and this new section of state law mandates that all 177 communities within the MBTA transit service area (see the below map) must have at least one zoning district near transit or other smart growth location where multi-family (defined as a building with three or more units) is allowed by-right. This new state law is intended to promote higher-density housing development in transit-accessible locations.¹ The state has provided more than \$2 million in

¹ <https://www.mass.gov/info-details/multi-family-zoning-requirement-for-mbta-communities>

technical assistance to more than 50 communities that are working to comply with these new requirements.² Compliant zoning must be in place by December 2023 for communities served by fixed-rail/subway, December 2024 for communities served by regional/commuter rail, and December 2025 for the remaining communities. All but one community within the MAPC region must comply with Section 3A, collectively removing zoning barriers to housing production at a regional scale. MAPC is providing technical assistance to many of these communities, by helping review existing zoning and identifying alternatives for zoning amendments. Section 3A is a critical tool to unlocking the development potential near transit, where exclusionary or restrictive zoning has outlawed multi-family housing.

Regional and Local Housing Actions

MAPC supports housing production, preservation, and stability through state-level legislative advocacy and local technical assistance to advancing housing strategies. MAPC provides over \$1.25M in technical assistance grants each year to cities and towns located within Greater Boston. Often, up to \$400,000 or more of these grants go to land use and housing planning projects, where MAPC planning staff work with cities and towns on a variety of projects, such as housing production plans, mixed-use/smart growth zoning, inclusionary zoning ordinances, fair housing plans, land disposition for affordable housing, housing needs assessments, and more. MAPC has helped cities and towns establish Affordable Housing Trusts, Housing Partnership Committees, and other groups to advance implementation of housing plans and strategies. MAPC's technical assistance program is crucial to ensuring cities and towns have the capacity to tackle challenging housing issues and projects.

MAPC also provides support to municipalities and state partners through housing-related research products. Notably, MAPC's [Zoning Atlas](#) highlighted the need for massive zoning reform to remove regulatory barriers to housing development. The [Housing Submarket Analysis](#) gave local planners and policymakers greater insights into local housing conditions and offered a suite of policy interventions to combat rising housing prices and displacement risk. A 2017 study on the [impacts of housing production on school enrollment](#) dispelled myths that new homes automatically lead to more students in local districts. In 2021, MAPC's [Rethinking the Retail Strip](#) research highlighted specific parcels that would be suitable for redeveloping with more dense housing options and a mixture of uses with improved connectivity, to transition the region from auto-dependent separated land use patterns to more walkable, "complete neighborhoods". The report found that if just 10% of the identified parcels were redeveloped, as many as 124,000 new homes could be created.

Beyond the work done in partnership with MAPC through the technical assistance program, cities and towns in Greater Boston continue to take steps to produce more affordable housing.

Inclusionary Zoning

Inclusionary zoning links development of market-rate housing with production of affordable units through the use of development incentives. Inclusionary zoning, which can apply city/town-wide or be limited to select geographic areas, requires a minimum percentage of low- and moderate-income housing in new residential development. MAPC has helped many cities

²<https://www.masslive.com/politics/2023/08/mass-adds-new-penalties-for-towns-not-following-mbta-communities-zoning-law.html#:~:text=The%20law%20was%20adopted%20in,or%20ferry%20terminal%2C%20if%20applicable.>

and towns adopt or update inclusionary zoning to produce more affordable homes. Over 60 communities in Greater Boston have some form of inclusionary zoning.

Municipal Affordable Housing Trust Fund

In 2005, the Massachusetts State Legislature passed the Municipal Affordable Housing Trust Fund Law, simplifying the process for cities to establish a local housing trust fund and enabling all communities to create a housing trust through their local legislative body. Since passage of the law, approximately 98 communities have established municipal affordable housing trust funds.³

City of Boston Housing Actions

According to the 2022 Income Restricted Housing Report prepared by the City of Boston Mayor's Office of Housing, Boston has the highest percentage of income-restricted housing of any major city in the country, with 19.2 percent of its total housing stock designated as income-restricted. In the past 10 years, Boston has permitted 8,975 income-restricted housing units, which is 21.4 percent of all permits during that time. In 2022 alone, 30 percent of all units permitted were income-restricted (1,299 units). A number of different strategies, outlined in more detail below, have contributed to consistently developing affordable housing.

Overhauling Boston's Antiquated Zoning Code to Remove Regulatory Barriers: In September 2023, the City of Boston released a [report](#) that initiated Zoning Reform and Zoning Compliance teams to support the City's ability to modernize and enforce the Code, which has not been comprehensively updated since 1964.

Inclusionary Housing Ordinance: The Inclusionary Housing Policy requires developers of large residential or commercial projects to contribute to Boston's affordable housing either by creating affordable units or making a financial contribution.⁴ Since its inception, the program has generated approximately 7,000 affordable housing units, according to data compiled by the Mayor's Office of Housing. In October 2022, \$1M in Inclusionary Development funds were used to create the state's first Mixed Income Neighborhood Trust and establish 114 affordable housing units.⁵

Eliminated Parking Minimums for Affordable Housing Developments: In December 2021, the Boston Zoning Code was amended to remove the requirement for a minimum number of parking spaces in new affordable housing developments.⁶ The policy aims to reduce construction costs and promote the development of more affordable housing units. Removal of parking units is a key enabler of inclusionary zoning policy effectiveness.⁷

³ https://www.mhp.net/assets/resources/documents/MAHTGuidebook_2018.pdf

⁴ <https://www.bostonplans.org/projects/standards/inclusionary-development-policy>

⁵ <https://www.boston.gov/news/acquisition-and-expansion-affordable-housing-east-boston-announced>

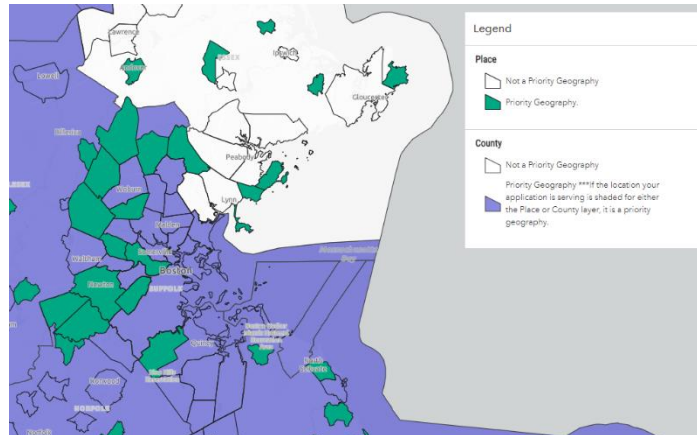
⁶ <https://www.bostonplans.org/news-calendar/news-updates/2021/12/22/mayor-wu-eliminates-parking-minimums-for-affordabl>

⁷ <https://www.hks.harvard.edu/publications/can-inclusionary-zoning-be-effective-housing-policy-greater-boston-evidence-lynn-and>

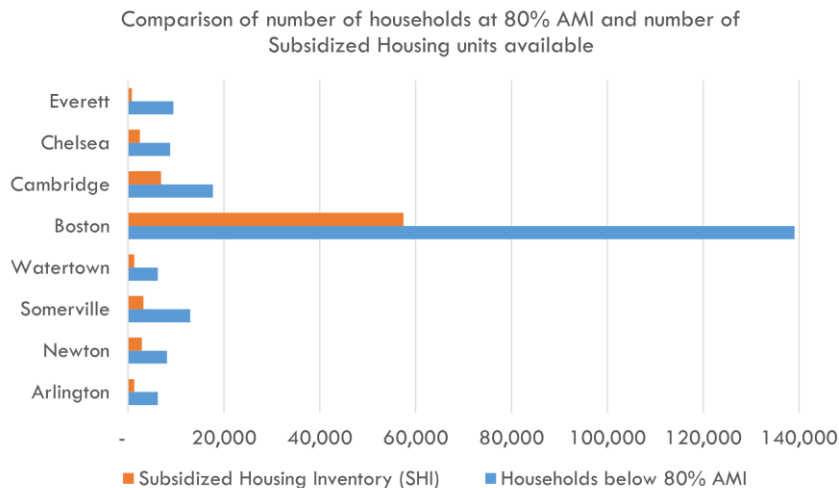
Acquisition Opportunity Program: In 2016, Boston earmarked \$7.5M for the Acquisition Opportunity Program, which provides funding to developers to purchase and preserve the affordability of multifamily housing properties in Boston and prevent displacement.⁸ Acquired properties must restrict 40% of proposed units to tenants earning up to 60% of the Area Median Income.⁹ To date, the Acquisition Opportunity Program has supported the acquisition of 632 units.¹⁰

Acute Need

The supply of affordable housing is failing to keep pace with the growing need of our region. The data clearly highlights the critical issue of inadequate affordable housing supply across our anticipated partner municipalities, which underscores the pressing need for action. The MAPC region is home to a number of HUD-designated priority geographies, as indicated in the following map. Housing need is further illustrated below.



Ratio of Household at or below 80% AMI to Affordable Housing Units available: The chart below provides a comparison between the count of households at or below 80% AMI and the Subsidized Housing Inventory (SHI) within our partner municipalities. To put this into perspective, in Everett, there are nearly 12 families at 80% AMI competing for each available affordable housing unit, while in Watertown, the ratio stands at 5 families for every unit. Source: HUD, EOHL.

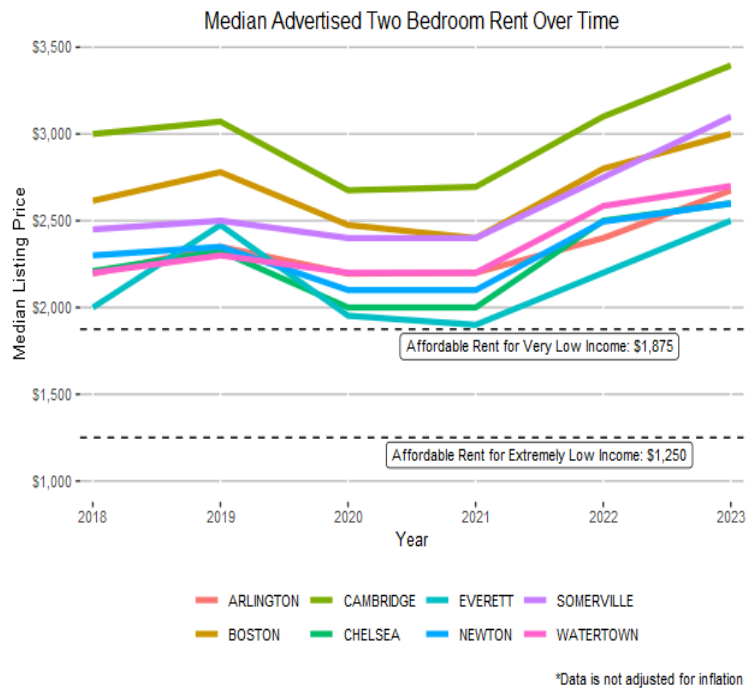


⁸ <https://www.boston.gov/housing/acquisition-opportunity-program>

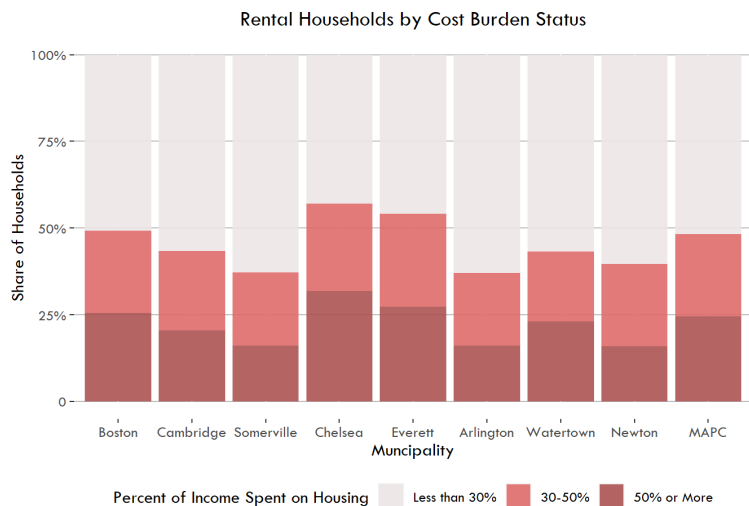
⁹ <https://www.boston.gov/sites/default/files/file/2023/01/Docket%20%230157.pdf>

¹⁰ https://home.treasury.gov/system/files/136/Boston_2022RecoveryPlan_SLT-0542.pdf

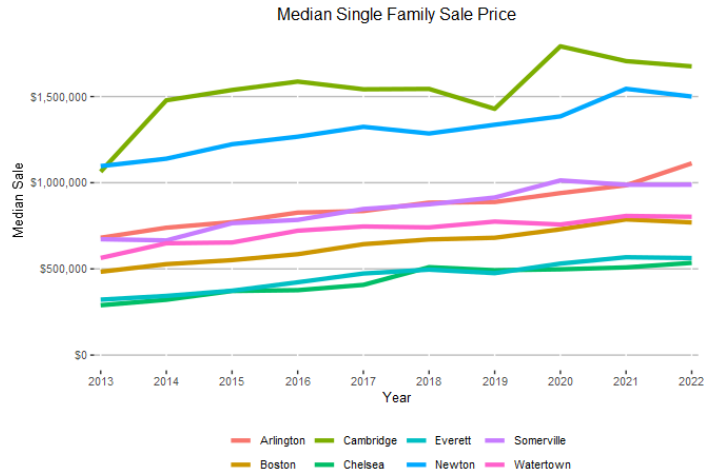
Rental Affordability: The chart below illustrates the median advertised rent for two-bedroom properties from 2018 to 2023. It's important to highlight that these median listing prices consistently exceed what can be considered affordable for both very low-income (\$1,875) and extremely low-income (\$1,250) households across all communities. This concerning trend has persisted throughout the entire period, with rental prices reaching as high as \$3,300 in Cambridge, and even the lowest rates, such as those in Watertown, remaining significantly high at up to \$2,500. Source: MAPC Rental Housing Listing Database.



Rent Burden: The severity of the housing crisis is further underscored when we examine the data on rent burden. The chart below illustrates the percentage of income that rental households in each of the participating municipalities, as well as the broader MAPC region, spend on housing. Nearly a quarter, or approximately 25%, of rental households face an extreme rent burden, allocating more than half of their income toward rent. This translates to an approximate total of 134,000 households grappling with this overwhelming financial strain. Source: ACS 2017-2021



Sale Prices: The urgency for housing becomes even more pronounced when examining the data on sale prices. The chart below illustrates a consistent upward trend in the median sale prices of single-family homes across all the participating municipalities from 2013 to 2022. Communities like Everett and Chelsea have witnessed a doubling of their median house prices over the course of the decade. Watertown has seen the smallest increase, which is still significant, an increase of more than a third. Source: MAPC, Real Estate Database from the Warren Group.



Key Barriers to Affordable Housing

In addition to availability of funding for affordable housing and outdated regulatory barriers (such as antiquated zoning codes and lengthy development approvals processes), producing affordable housing in the Greater Boston area is hindered by high construction and development costs. Related to this, construction timelines and local opposition to the production of new housing units impede housing growth. Offsite construction provides the biggest opportunity to lower barriers related to high construction and development costs, while also offering relief to construction timelines and local opposition.

According to data compiled by the City of Boston Mayor’s Office of Housing, over the past five years, the median time between permit application with the City’s Inspectional Services Department, through project completion, for all new residential construction projects, is just shy of 3 years (1,089 days). Statewide, analysis from RS Means, a national construction data tracking service, highlighted that multifamily housing construction costs are 20 percent higher than the national average, dampening the potential for private housing developers to produce both market-rate and affordable units.¹¹ Climbing construction costs mean that more public dollars must be contributed to produce affordable housing. Interviews with dozens of local and regional developers indicate that overall development costs can easily be more than \$500,000 per unit in the urban core of Metro Boston and more than \$400,000 elsewhere in the region.

Local opposition to the construction of new housing remains a barrier to increasing housing supply. In 2018, Boston University researchers Katherine Levine Einstein, Maxwell Palmer, and David Glick published an article titled, “*Who participates in local government? Evidence from meeting minutes,*” sharing findings following the compilation and analysis of a novel data set that coded thousands of instances of citizens speaking at planning and zoning board meetings in Massachusetts concerning housing development. They found that individuals who are older, male, longtime residents, voters in local elections, and homeowners are significantly more likely to participate in these meetings and overwhelmingly (and to a much greater degree than the

¹¹ [Building Momentum: New Housing Policies to Unlock the Commonwealth’s Potential](#), Massachusetts Housing Partnership, August 2023.

general public) oppose new housing construction. The researchers ultimately conclude that these participatory inequalities have important policy implications and may be contributing to rising housing costs. Modular construction addresses local concerns related to onsite disruptions by spending much less time building homes onsite, compared to traditional construction methods that can impact neighborhoods for months or years.

Exhibit D Soundness of Approach / Metropolitan Area Planning Council



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Exhibit D Soundness of Approach

Vision

Collectively, the Greater Boston region imagines a future where all residents have safe and comfortable homes that they can afford in the communities that they prefer.¹ This grant proposal, through creation of more and diverse homes built by workers with good benefits throughout Greater Boston, advances the regional vision and regional housing initiatives, including the [Metropolitan Mayors Coalition](#) (MMC) – a group facilitated by MAPC and comprising the chief executives of 15 cities and towns in the urban core of Metro Boston, where more than 1.4 million people reside – and their [Housing Task Force](#), established in 2017 to address collectively their serious housing needs. The MMC Housing Task Force set a landmark housing production goal: 185,000 new units between 2015 and 2030 in their 15 communities. To achieve this goal, the region needs to continue to remove barriers to conventional housing production, while also researching and promoting alternative and innovative construction technologies that can complement but not replace our thriving construction industry.

This grant proposal advances our vision by seeking to address three barriers to the production of new affordable housing units in the Greater Boston region: 1) high construction costs; 2) time to construct new housing; and 3) local opposition to new construction projects. By developing a regional strategy to research and incentivize the use of innovative offsite construction methods (as opposed to traditional, wood and steel frame construction), we will reduce these barriers to affordable housing production. Offsite manufacturing methods are often organized into three categories or degrees of enhancement (or prefabrication) or level of completion/finish: (1) kit-of-parts (1D systems), panelized (2D), and modular (3D) systems.² All of these systems have been used to build housing in the Greater Boston area, though steel and wood-frame onsite construction remains the predominant method of construction.

With a regional approach, we will effectively tackle one of the largest barriers to the widespread use of offsite construction in the Greater Boston area: the lack of a manufacturing facility in close proximity to cities and towns in which most of the State's new housing is being built.

¹ Housing Vision, [MetroCommon2050](#) Regional Plan, Metropolitan Area Planning Council, 2021.

² https://drive.google.com/file/d/1AnG_FMus-gfCDC8HyOS186yzH0JLcsVz/view

Through extensive engagement with subject matter experts and stakeholders, it has become apparent that the lack of a manufacturing facility within 50 miles of Boston is the most significant barrier to modular construction due to both the transportation and logistical challenges of transporting modules across state and country boundaries, and the pressure to employ local residents throughout all phases of construction projects. To attract a large manufacturing facility, there must be sufficient demand. Based on our research, the optimal pipeline needed to support a large manufacturing facility is approximately and at a minimum 1,000 housing units per year for at least three years. The acute demand for new housing units, and especially affordable housing units, in the Greater Boston area is great enough to achieve this required demand, but individual resources are not sufficient for one municipality to demonstrate such a pipeline, hence the need for a regional approach. If awarded these funds, our goal is to support construction of a new manufacturing facility and produce the first 500 units of affordable modular housing by the close of 2030.

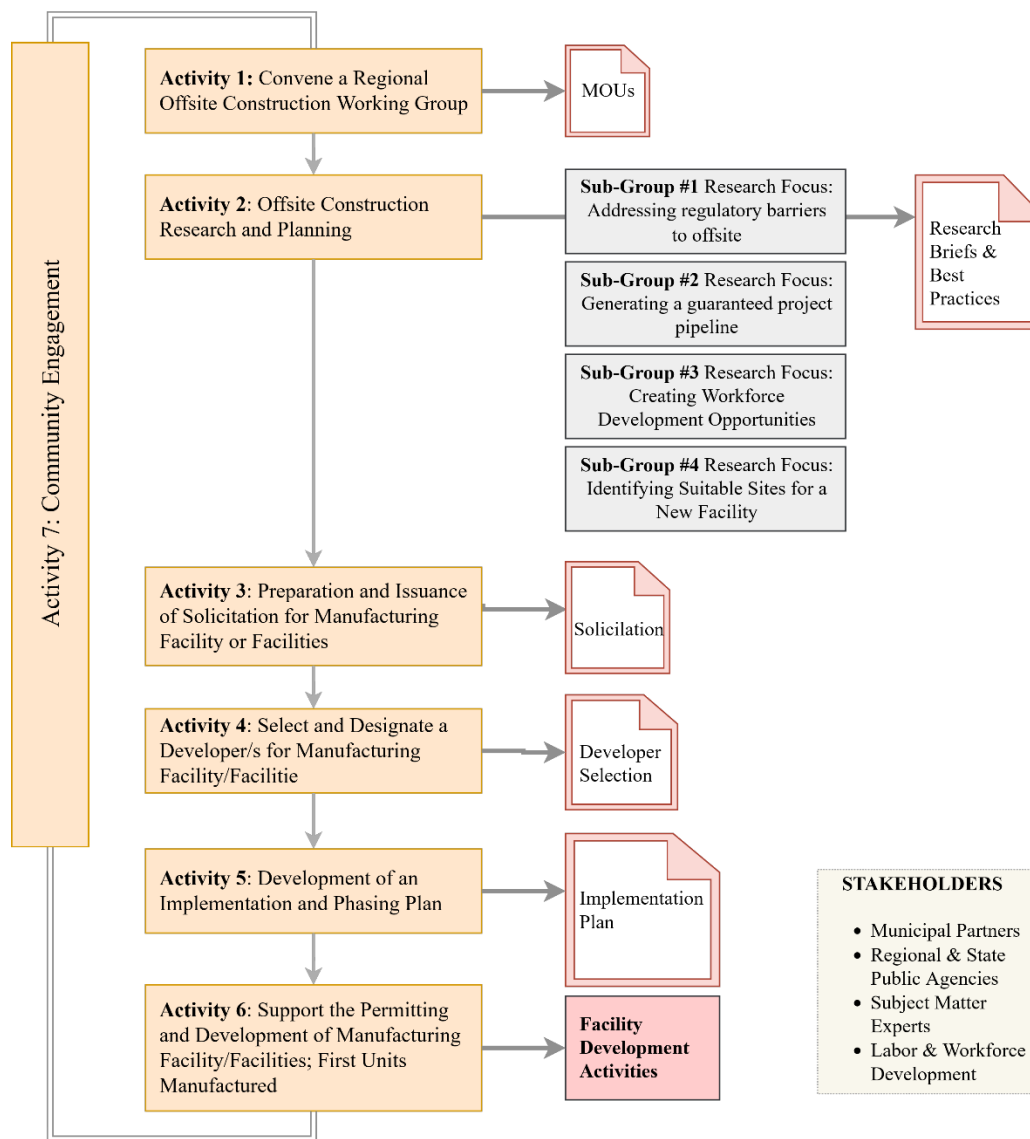
Approach

The siting of a manufacturing facility or facilities to advance housing production in the Boston metropolitan area will benefit low- and moderate-income persons, helping to achieve a national objective of the CDBG program, pursuant to section 101(c) of the Housing and Community Development Act of 1974, by increasing the region's capacity to efficiently construct housing units affordable to these households. While offsite construction methods are certainly not limited to affordable projects and have been more widely used to produce market-rate units in the region, the primary objective of this initiative will be to accelerate the production of housing units affordable to low- and moderate-income households by incentivizing the use of offsite construction methods. In our research, we found that the key to efficient, cost-effective production of affordable housing is replicability. We are proposing to work with a manufacturer or manufacturers to design basic modules that can be situated in a variety of contexts, including accessory dwelling units (ADUs), duplexes, small multi-family buildings (e.g., triple deckers or triplexes, townhomes, etc.) and other infill, "missing middle" housing typologies that allow for the addition of "gentle density" in neighborhoods across Greater Boston.

Our proposed plan includes completion of the following eligible activities as outlined in the grant NOFO:

- Planning and policy activities supporting affordable housing, including 1) developing new incentive programs for affordable housing development; 2) developing proposals to eliminate restrictions on lower-cost housing types such as prefabricated or manufactured homes; and 3) creating affordable housing planning resources for member jurisdictions.
- Development activities, specifically providing large-scale technical assistance to entities that lead to the development of affordable housing.

The figure below visualizes the grant activities to demonstrate the variety of tactics that will be employed to better understand and address the barriers and opportunities for increasing offsite construction in Greater Boston, in partnership with stakeholders, including municipalities, manufacturers, labor groups, and community-based organizations. More detail on each of the proposed activities is explained below.



Activity 1: Convene a Regional Offsite Construction Working Group and Sub-Groups

Timeframe: January – June 2024

Major milestone/deliverable: Signed Memorandums of Understanding by June 2024

MAPC will form a working group to guide implementation of the grant. Stakeholders will include state and municipal leaders and regulators, affordable housing developers (including non-profit), manufacturers, architects, researchers, housing planners, regional and state labor partners, and general contractors. Many of these partners were engaged during the grant application writing process and some have supplied letters of support. Outreach was conducted with Arlington, Cambridge, Chelsea, Everett, Newton, Somerville, and Watertown, and all have shown interest in participating, if the grant is awarded. MAPC will do additional outreach with member municipalities to see who may want to join in this effort, beyond those engaged during the grant application submission period.

Participating cities and towns will sign Memorandums of Understanding (MOU) with MAPC to formalize each municipality's commitment to studying and eventually committing resources to create a pipeline of affordable housing units (the mechanics of which will be developed as part of the planning process, see Activity 2). Supplementary partner agreements with other stakeholders (such as researchers and subject matter experts) will be developed in this phase to specify roles and responsibilities.

In addition to forming the overall Working Group, MAPC will work with partners to assemble sub-groups to conduct research and planning activities outlined in Activity 2.

This task is a grant-eligible activity as it is a critical step in the development of a plan and proposal for an offsite manufacturing facility to support the production housing, including affordable housing. As the regional planning agency for the 101 cities and towns of Greater Boston and expert convener of a variety of coalitions, MAPC is uniquely positioned, and has substantial capacity, to lead this effort in partnership with participating municipalities and other stakeholders.

Activity 2: Offsite Construction Research and Planning

Timeframe: January 2024 – July 2025

Major Milestones/Deliverables: Meetings of sub-groups; engagement activities with stakeholders; briefing papers that outline research findings and recommendations; amended Memoranda of Understanding to address unit commitments, resident employment guarantees, and other provisions that may result from this research phase.

The second major activity constitutes the largest body of work associated with this initiative. The working group will convene the four sub-groups formed in Activity 1 to focus on different aspects of offsite construction technologies, including barriers to offsite construction and opportunities to generate good jobs producing affordable homes.

Sub-Group #1 Research Focus: Addressing regulatory barriers to offsite construction

Members: municipal and state regulators, developers, architects, manufacturers, lenders, etc.

Deliverable: briefing paper summarizing the sub-group's work and findings

MAPC will convene a sub-group of regulators, developers, manufacturers, lenders, and others who often navigate the permitting process to site and install modular housing. The sub-group will be focused on understanding offsite construction, through presentations from subject matter experts and potential site visit(s) to manufacturing facilities and sites with modular development. Once the sub-group has a solid understanding offsite construction, the work will shift to exploring the regulatory barriers – both regionwide and specifically in participating municipalities. Regulatory barriers may be found in local zoning codes, local and state building codes, permitting processes and requirements, or other controls. A focus group with construction lenders will increase understanding of financial regulations that may hinder the use of offsite construction methods. The sub-group will likely convene additional focus groups and conduct interviews to better understand regulatory conditions and opportunities for policy/regulatory interventions. Peer regions such as Chicago, Philadelphia, and San Francisco will be studied to understand where Greater Boston may be unique or similar and what case studies or best

practices employed elsewhere may be applicable in Greater Boston. Findings from this research will be presented to the sub-group to inform recommendations for policy and regulatory change.

Sub-Group #2 Research Focus: Generating a project pipeline

Members: municipal leaders and staff; state housing partners; community-based developers

Deliverable: Potential amendments to Memoranda of Understanding to reflect sub-group recommendations; memo summarizing the sub-group's work and findings

MAPC will work with participating cities and towns to understand their unique housing needs and housing toolkits to support housing production. Cities and towns have a variety of different ways to influence housing production – through municipal housing authorities and affordable housing trusts; investments from Community Preservation Act funds; disposition of publicly-owned land, etc. MAPC will draw from existing municipal housing plans like housing production plans, neighborhood plans, or comprehensive plans – many of which have been drafted by MAPC – to understand the local context, identify resources to commit to modular development, and generate a list of likely sites and projects that could proceed once a manufacturing facility is up and running.

State entities also have resources to encourage and influence housing production. MAPC will convene the sub-group to work with state and municipal leaders and staff to explore different options for creating a pipeline of likely or permitted projects that could serve as an incentive for a new manufacturing facility to locate in Greater Boston. The sub-group will explore smaller scale projects that allow for more on the project learning, aiming to not negatively impact the existing employment systems. MAPC will work with individual municipalities to develop their pipeline and provide confidence of future construction. Potentially, state partners may identify opportunities to incentivize the facility or help cities and towns to meet build out their pipeline of units.

This sub-group will also discuss and recommend how to pace unit creation/installation to ensure housing production is increasing across all participating communities and how to track and evaluate unit placement. Tracking will be important to measure how this project advances fair housing and racial equity goals. Lastly, the sub-group will prepare guidance on how modular housing can be coupled with traditional construction methods to combat the overall housing shortage. This guidance could include identifying the types of development better suited for offsite construction components in the future, where prefabricated components could improve or enhance older housing stock, or what sites might be better suited for modular or prefabricated homes.

Sub-Group #3 Research Focus: Generating Good Jobs for Boston Area Workers

Members: Representatives from Greater Boston Labor Council, Massachusetts Building Trades Council, Carpenters Union (North Atlantic States Regional Council), and/or other labor organizations; regional economic development planners and researchers; municipal leaders and staff; and other stakeholders, to be determined from subsequent outreach and engagement during Activity 1

Deliverable: Memo summarizing the sub-group’s work, findings, and recommendations for minimum qualifications to be required of any manufacturing facility regarding jobs, wages, and benefits.

MAPC and the participating municipalities are committed to securing good jobs, benefits, and worker protections for local residents. Modern advancements in alternative construction technologies and modern offsite construction techniques mean that today, this segment of the construction industry can provide good-paying jobs with workforce development and training. We have been actively researching workforce development models associated with manufacturing housing types to support the creation of jobs and job training for local residents. Examples of unionized facilities and fair labor agreements have been employed in other parts of the United States, and as close as New Hampshire, as well as abroad. MAPC will convene this sub-group to research all of these issues and emerging best practices, alongside a variety of labor and workforce partners and economic development professionals to understand challenges and opportunities to securing good jobs, wages, benefits, and protections for local workers manufacturing and installing modular housing in Greater Boston. We also hope to better understand how onsite construction has already been utilizing offsite or prefabricated components, as we understand this is happening in Greater Boston. Additionally, part of this research will look into the impacts of expanding this type of manufacturing to employ historically under-resourced groups like women, people of color, and people with less educational attainment. For example, while the traditional construction industry employs fewer women (only 9% of the workforce today), manufacturing jobs offer women more of a chance at economic prosperity (30% of manufacturing jobs are held by women). These nuances will be explored as part of this sub-group’s research to more fully understand how these two industries – aimed at the same goal of producing more housing – can both thrive and offer economic opportunity for local residents. The sub-group will also hold focus groups with local workers – in both construction and trade and manufacturing jobs – to better understand workforce challenges, opportunities, and needs.

The sub-group’s work will culminate in recommendations for labor requirements to be included in any solicitation or incentives for the manufacturing facility. A briefing paper will also summarize the sub-group’s engagement process, findings, and broader recommendations to set a precedent for creating good jobs at offsite construction facilities across Massachusetts. This research will be useful for regions across the country and complement existing research underway at HUD.

Sub-Group #4 Research Focus: Identifying Suitable Sites for a New Facility

Members: Municipal leaders and staff; economic development planners and researchers

Deliverable: Memo summarizing the sub-group’s work, findings, and recommendations for manufacturing facility solicitation

MAPC has expertise in industrial/manufacturing sector research and recently completed a baseline study to better understand Greater Boston’s industrial sector. The study, “[Land, Economy, Opportunity: Industrial Land Supply and Demand for Greater Boston](#),” assessed industrial space supply, industrial vacancy rates, industrial rents, and projected demand and will serve as a starting point for this sub-group’s work to identify suitable sites for a new

manufacturing facility. MAPC will review other regional and local economic development and industrial planning documents to guide and inform the group's work. Focus groups and interviews with owners and operators of manufacturing facilities will help the sub-group understand what site characteristics are most desired to best meet their needs and enable a facility to get online and running most quickly and efficiently. The sub-group will explore different options with partnering municipalities, including redevelopment of vacant industrial spaces, consideration of one large site vs. multiple smaller sites, etc. The sub-group will also explore the different incentives to include in the solicitation. The sub-group will make a recommendation to the overall Working Group about facility siting and work with the host municipality(s) and their legal counsel to prepare for Activity 4.

The findings and recommendations from these four sub-groups will be shared with the Working Group and will inform Activity 3.

This task is an eligible activity under this grant as it is a planning activity to develop a proposal for a manufacturing facility to support the production of affordable housing for low- and moderate-income households. MAPC and participating jurisdictions, including the City of Boston Housing Innovation Lab (which has already compiled substantial research in these areas), have the capacity and willingness to accomplish the research tasks associated with this activity.

Activity 3: Preparation and Issuance of Solicitation for Manufacturing Facility or Facilities

Timeframe: July-December 2025; Responses due March 2026

Deliverable: Solicitation, may take the form of a Notice of Funding Opportunity (NOFO) and/or Request for Proposals (RFP)

With the research and recommendations provided in Activity 2, MAPC will work with the Working Group and partner municipalities to prepare recommendations for solicitation that may include, but are not limited to, any of the following components: seed funding for a manufacturing facility (coming from this grant proposal), land, specialized financing arrangements, details about a development pipeline, and expedited permit pathways. The host municipality(s) will finalize and advertise the solicitation in accordance with their local procurement processes.

This task is an eligible activity under this grant as it seeks to incentivize the production of affordable housing for low- and moderate-income individuals by enhancing regional infrastructure for the creation of affordable housing units. As the regional planning agency for the 101 cities and towns of Greater Boston, MAPC is uniquely positioned, and has substantial capacity, to provide technical assistance to develop recommendations for the solicitation, in partnership with participating municipalities. The host municipality(s) will lead on issuing the solicitation, and all local/state procurement processes required will be followed. All of the partnering municipalities, in addition to MAPC, have access to legal counsel to help in preparation of the solicitation.

Activity 4: Select and Designate a Developer(s) for Manufacturing Facility/Facilities

Timeframe: April-May 2026

Deliverable: Legal documents to confirm selection of chosen developer

Upon receipt of responses to the NOFO, RFP, or similar offering document, MAPC will work with the municipality(s) hosting the facility(s) to convene a review committee (formed with input from the Working Group and consisting of at least one designee from each participating municipality and stakeholder representatives) to select and designate a developer for the manufacturing facility or facilities. MAPC and the municipality(s) overseeing the procurement process will consult with legal counsel, as needed, to ensure all procurement and selection processes adhere to necessary federal and state laws and regulations.

This task is an eligible activity under this grant as it will facilitate the production of affordable housing units through the creation of infrastructure necessary for the development of affordable housing.

Activity 5: Development of an Implementation and Phasing Plan

Timeframe: June 2026-December 2026

Deliverable: Implementation and Phasing Plan

Activities 5 & 6 may occur simultaneously. The development of an implementation and phasing plan to permit, construct, and begin manufacturing modules will be created. MAPC and the host municipality(s) will work with the chosen developer, seeking input from the Working Group and sub-groups as necessary. The implementation and phasing plan will be shared with the Working Group and sub-groups for review and comment. The phasing will allow for a coordinated “unit ordering” process once the manufacturing facility is constructed. The Working Group will engage the selected developer/manufacturer to understand the facility’s capacity in terms of output and sequence production of housing units in alignment with projected demand and availability of sites.

As part of this Activity, MAPC, the municipalities, and (if they wish) labor organizations, will work to ensure that a package of wages, benefits, and worker protections are available to all workers to be employed at the facility, as well as workers charged with installing prefabricated modules on-site. MAPC will coordinate with local and regional workforce boards to help generate trainees and employees. MAPC will also coordinate with unions and other labor organizations to ensure that their members have the opportunity to seek employment at the facility, to participate in on-site installation, and to establish connections, if possible, between labor apprentice and training programs and the search process for workers.

As a testament to our commitment to workforce development and our ability to secure funding for impactful initiatives, it is noteworthy that in the past, MAPC partnered with the City of Boston as the lead applicant to successfully secure funding from the Economic Development Administration. This funding supported the establishment of the Greater Boston Regional Workforce Training System and is catalyzing job creation, forging pathways that lead individuals to attain family-sustaining wages, access employer-sponsored benefits, and pursue educational advancement. Drawing upon the invaluable experience gained from this successful venture, MAPC is well-positioned to leverage our expertise and insights to enrich the workforce development activities outlined in this proposal.

Throughout this endeavor, we are committed to actively engage in outreach, identify training needs, and facilitate employment opportunities for the residents of the participating municipalities. Additionally, we are dedicated to ensuring that individuals from diverse racial backgrounds, women, and other marginalized groups who contend with higher rates of unemployment or underemployment are included in our efforts.

This task is an eligible activity under this grant as it is a planning activity to ensure the manufacturing facility is constructed and enabled to support and produce affordable housing for low- and moderate-income households.

Activity 6: Support the Permitting and Development of Manufacturing Facility/Facilities; First Units Manufactured

Timeframe: June 2026 – December 2029

MAPC, the host municipality(s), and the Working Group will support the developer through the permitting and development process in the municipality where the facility or facilities is/are proposed to be built. Based on our conversations with stakeholders and subject matter experts, we anticipate that a facility/facilities could be constructed (to the point of receiving a certificate of occupancy) as quickly as two years after gaining site control and appropriate financing. We hope that the facility will be online and producing modular housing units by the end of 2030. There is a strong potential for 500 modular housing units being in the pipeline or constructed by the end of 2030, with each year after this grant period ends resulting in additional modular homes that can be sited and installed throughout Greater Boston over the following decade(s). This task is an eligible activity under this grant as it will facilitate the production of affordable housing units through the creation of infrastructure necessary for the development of affordable housing.

Activity 7: Community Engagement

Timeframe: Throughout, beginning in January 2024

Deliverable: Community Engagement Plan; project webpage and newsletter with periodic updates to stakeholders and interested parties

MAPC will work with the Working Group to create a community engagement plan that centers on inclusive and frequent communication with a variety of stakeholders. MAPC and the Working Group will work to inform the general public about the project and the potential impact to addressing local affordable housing and workforce needs. A project webpage will be created, and a project newsletter will allow anyone to subscribe and follow the project progress. Focus groups, interviews, pop-up events, online forums, and other engagement strategies will be employed to hear from project stakeholders and local residents, particularly those who have been historically underrepresented (renters, people of color, people with lower incomes, veterans, seniors, people with disabilities), at key points in the process. The project budget includes gift card incentives or other forms of compensation for involvement of residents of protected classes in the grant project, including one-off engagement events or participation the Working Group or sub-groups. MAPC will work with partnering municipalities and their existing communication channels to further expand the project reach.

An important goal and outcome of the project's community engagement strategy will be to shift the perception of prefabricated or modular housing across different groups. MAPC and the Working Group will hold focus groups to gain a better understanding of how modular housing is perceived today. Depending on the feedback received during these focus groups, MAPC and the Working Group will design a public campaign to share information about recent innovations in the field and how this type of manufacturing can complement traditional construction methods, address housing challenges, and provide good jobs with benefits for local residents.

This task is an eligible activity under this grant as it is a critical step in the development of a plan and proposal for an incentive package to support the production of affordable housing, including the research products and recommendations to get to the point of issuing a solicitation. MAPC is uniquely equipped, and has substantial capacity, to lead this effort in partnership with participating municipalities and partners as MAPC, as a whole, and particularly the [Community Engagement Department](#), is dedicated to equitable, inclusive, and innovative engagement. The Community Engagement Department will help craft and implement the engagement plan, but they are also well-versed in evaluating and adapting engagement efforts as projects progress and will be prepared to do this for this project. This will ensure that the Working Group and sub-group is not only guided by technical information and research but also the feedback from people who will one day live in modular or prefabricated homes.

Overcoming Barriers

The City of Boston's Housing Innovation Lab has spent the last few years researching alternative construction technologies to understand barriers and opportunities. Here, we outline findings from this research that we hope to address through this grant project, if awarded.

Barrier #1: Construction Timelines. Modular Construction Has Potential to Reduce Construction Timelines and Waste, Both of Which Translate into Cost Savings

A preliminary analysis completed by the Boston Housing Innovation Lab of construction budgets and timelines for mid-sized housing development projects in Boston, New York City, and Los Angeles concluded that modular construction has the potential to reduce construction timelines by 20-30%, since modules can be manufactured while foundations, masonry, and slab work happens simultaneously on-site. Timeline reductions continue to grow as local manufacturers and other players progress along the learning curve. Shorter timelines, in turn, translate to reduced carrying costs of construction financing.

Offsite construction methods also yield considerable reductions in construction waste. Fabricating modules in a controlled factory setting enables manufacturers to pass unused materials from one project to the next without the risk of physical degradation or added transportation costs. Because modular units are not exposed to the elements during construction, they also tend to be more durable than materials stored and assembled on an exposed project site. Offsite construction techniques are similarly efficient at the point of demolition. When a modular

building needs to be moved or demolished, volumetric units can be disassembled and even reused on a different project site, potentially extending the lifespan of a building.³

Barrier #2: Lack of Local Manufacturing Facilities. Siting a new facility within Greater Boston will decrease transportation and logistics costs, leading to lower housing costs.

Transportation and logistical challenges increase as the distance between the manufacturing facility and module-placement site increase. Given the limited number of manufacturing facilities in Massachusetts, most modules that end up in Greater Boston are trucked across state lines. This presents challenges, as states enact unique requirements for trucking operations, meaning that rules for lead times and costs, allowable times of day for transport, escort car rules, etc. may differ. State requirements on dimensions, weight, and carrier connections of offsite construction product freight that can also impact the design and associated cost of offsite construction for housing, sometimes even eroding the method's financial benefits over traditional construction techniques. Locating a facility in Massachusetts minimizes costs and coordination needs for transportation and logistics, leading to lower housing costs overall.

Barrier #3: Local Opposition. Modular Construction Techniques Can Result in Less Disruption to the Local Neighborhood

Traditional construction methods typically result in significant disruptions to residents and businesses surrounding a given project site, ranging from air and noise pollution to scaffolding, sidewalk closures, and increased traffic congestion. Disturbances often continue for months, if not years on end, and can deepen community opposition to new housing development. Modular construction techniques lead to a substantial reduction in the amount of work to be completed on site, which in turn compresses project timelines and diminishes interruptions to neighborhood life. In some modular multifamily projects, 'setting,' or the assembly of prefabricated modules on site, can be completed within a matter of days or weeks.

Lessons Learned

Modular and prefabricated housing is already being produced and sited in Greater Boston; however, it has been difficult to site a facility here to make it a more cost-effective, attractive option for developers to explore. Understanding these local limitations and experiences, this proposal is also informed by the successes and challenges of similar efforts undertaken in Minneapolis, Minnesota (Minneapolis Public Housing Authority), Boulder, Colorado (the City of Boulder), New York City (Capsys), and the San Francisco Bay Area (Katerra), as well as Boston's study of local barriers to scaling offsite construction methods, as described below.

The *Minneapolis Public Housing Authority (Minneapolis, Minnesota)* has demonstrated successful modular construction for affordable housing through a scattered-site, multi-unit project that will create 84 housing units across 16 small scale apartment buildings. Key ingredients for success include innovative financing and procurement strategies to make funds available earlier in the development process, features we intend to incorporate into our strategy.

³ <https://learn.aiacontracts.com/articles/modular-construction-is-a-sustainable-way-to-build/>

The *City of Boulder, Colorado* spearheaded construction of a modular manufacturing facility to support affordable housing production. Scheduled to be completed in early 2024, the factory is slated to produce 12 to 15 modular homes per year in the first few years. The homes will be high-quality all-electric structures powered by solar energy, and will be permanently affordable to low-, moderate-, and middle-income households. While the project continues to move forward, it has faced significant delays due to abutter opposition. Informed by Boulder’s experience, we’ve included substantive, meaningful community engagement as part of the research and planning process to designate potential sites for a facility or facilities. The passing of the state-mandated Section 3A MBTA Communities, which requires that nearly all the municipalities in the Greater Boston region have at least one zoning district that allows multi-family zoning by right, also minimizes the impact of local opposition putting a halt to much needed affordable housing production located near transit and other dense, walkable neighborhoods.

In *New York City, Capsys*, a private modular manufacturer, opened a facility on leased land in Brooklyn to support construction of modular projects on nearby sites. The factory’s close proximity to project sites allowed modules to be produced and staged with significantly lower transportation costs (as compared to projects sourcing modules produced in nearby factories in Pennsylvania). While initially successful, Capsys was ultimately unable to continue its operations when the property lease ended, and the owner decided to pursue a different use for the site. Our strategy is informed by Capsys’ experience and the importance of having site control to support a manufacturing facility’s long-term sustainability. Our proposal will leverage publicly-owned land or public-private partnerships to limit challenges with term-limited lease agreements.

The downfall of modular manufacturer *Katerra* illustrates the importance of selecting manufacturers familiar with the construction industry. Founded in 2015, startup manufacturer Katerra opened a facility in Tracy, California, with over \$2 billion in investments. The company ultimately went bankrupt before scaling up production, and the facility was acquired by Volumetric Building Companies in 2021. Industry experts posit that Katerra’s demise was caused by the fact that Katerra was first and foremost a technology company that was attempting to change construction, as opposed to a construction company that embraces the use of technology to accelerate production.⁴ We will take this case study into consideration when preparing the RFP or NOFO and in ultimately selecting a manufacturer to develop a facility. By partnering with construction professionals throughout this process, we will also hopefully foster new opportunities for the two industries to learn and benefit from one another.

This grant project will complement the “HUD Breakthrough Pilot Handbook: Growing Offsite Construction for Housing through Regional Pilot Projects” Grant Proposal submitted by the City of Boston and MOD X. If awarded, both grant projects will be working in close coordination to share lessons learned.

⁴ <https://www.constructiondive.com/news/volumetric-building-companies-modular-builder-CEO-katerra-failure-spectacular/610565/>

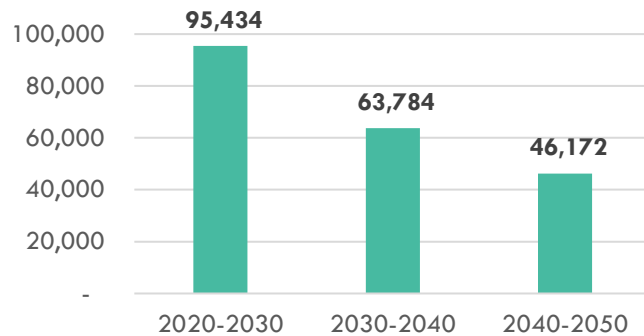
Alignment with Existing Planning Initiatives

Incentivizing the use of offsite construction methods through the siting of a nearby manufacturing facility aligns with a variety of existing planning efforts, helps the region plan for expected population and household change, and is consistent with our State and local land use, sustainability, economic development, and equity and inclusion initiatives.

Planning for expected household change

MAPC prepares forecasts of population, households, and employment by sector out to the year 2050. By the year 2050, the MAPC region will need 200,000 new homes to accommodate population growth. Nearly half of that demand will occur by 2030. Because of the “business as usual” model assumptions, this is a bare minimum number. It is expected to grow with more welcoming national immigration policies and removal of zoning barriers under Section 3A MBTA Communities (multi-family zoning). As production increases and housing prices stabilize, more people may also choose to move to the Greater Boston region due to high quality of life and access to good jobs. Given this housing unit demand, it is imperative that municipalities in the Greater Boston region explore all avenues to efficiently produce quality and affordable new housing. This proposal, by exploring offsite construction as a complement to traditional construction methods, can help us meet our housing need.

Projected Housing Unit Demand in the MAPC Region



Consistency with Land Use and Transportation Initiatives

By increasing our region’s capacity to construct new housing units more efficiently, our approach is in alignment with local and regional planning initiatives, including the aforementioned Multi-Family Zoning Requirements for Communities near Transit Stations (MBTA Communities). Removing zoning barriers like this is one significant step towards meeting housing production goals, but we also must think creatively about how to fast-track production of quality and safe housing in these smart growth locations. This grant proposal offers a solution to work alongside our traditional construction methods for producing new homes. Under Activity 2, when assessing and determining a project pipeline for a new manufacturing facility, MAPC and the participating municipalities will be focused on identifying sites that have access to transportation options and other neighborhood amenities like parks, public services, and jobs. The project pipeline will also consider a community’s current housing stock, documented housing need, and municipal population and household projections. Housing options that are in short-supply in a community – such as smaller, more affordable units for aging residents or family-sized subsidized apartments for families earning lower incomes – can be targeted for the project pipeline.

Consistency with Environmental Initiatives

Scaling up the use of offsite construction technologies for housing construction will advance regional and local environmental initiatives. MetroCommon2050, the regional plan, calls for more energy-efficient buildings and climate-smart growth. Aligned with state goals, the region aims to make deep cuts in greenhouse gas emissions by 2030 and reach net zero emissions by 2050. Furthermore, the Metropolitan Mayors Coalition has formed a Climate Task Force to coordinate regional and cross-governmental work to prepare for climate change. Participating municipalities recognize that housing and climate goals overlap and see the opportunity for this project to advance both goals. An example of how cities are connecting climate and housing planning is Boston’s Climate Action Plan, released in 2019, which charts a clear course for reaching the City’s 2030 and 2050 carbon reduction goals. Boston’s buildings account for approximately 71 percent of our community carbon emissions and represent the greatest opportunity for emissions reductions. Decarbonizing Boston’s building sector depends on shifting to zero net carbon (ZNC) new construction by 2030 and retrofitting and electrifying at least 80 percent of our existing buildings over the next 30 years. Advances in building materials and offsite construction technologies hold great promise in helping the City, region, and state reach its climate goals.

Consistency with Economic Development Objectives

Siting an offsite manufacturing facility in Greater Boston will generate economic development opportunities through the creation of quality jobs and locally produced building components. Jobs in manufacturing facilities have the potential to offer better working conditions than those on traditional stick-built construction projects due to their climate-controlled nature. Modular construction is generally regarded as a safer method than traditional construction methods; a 2021 peer-reviewed academic journal article by Gilsu Jeong et al., reports, “*there is also an opportunity to reduce safety accidents [in manufacturing facilities] because [they are] not profoundly affected by external environmental factors, such as rainfall and wind. Workers can become familiar with the workspace and work because they perform repetitive tasks in manufacturing factories.*”⁵

The sub-group focused on identifying appropriate site(s) for a new facility will rely on state, regional, and local economic development policies and plans. Many of the cities and towns throughout Greater Boston have vacant industrial sites that are ripe for redevelopment. MAPC will work with its member municipalities to identify and study industrial redevelopment opportunities that are located in areas with good transportation access, keeping in mind that freight access is important for transporting modules, while transit access is also important for workers. If necessary, MAPC will facilitate conversations with the facility developer and participating municipalities to include transportation demand management strategies within the NOFO and/or RFP to ensure traffic to and from the site is managed effectively and does not negatively impact the community.

Consistency with Equity and Inclusion Initiatives

Our proposal most directly advances equity and inclusion initiatives by creating new jobs with rich benefits for local residents, especially those who have historically not had access to such opportunities. With labor partners, we hope to partner and continue to diversify local workers to ensure the local workforce reflects the diversity of the community in which they work;

⁵ <https://www.tandfonline.com/doi/full/10.1080/13467581.2021.1877141>

expanding the share of affordable housing, particularly in high opportunity neighborhoods to make strides towards decreasing the racial and social wealth gap; and recognizing transportation equity as a key consideration for siting new facilities and jobs.

To further provide an example of how this project and its associated workforce development and labor components are consistent with equity and inclusion initiatives, we provide some local context from the City of Boston. The proposal's goal to create jobs will allow local construction projects to satisfy, or exceed, the requirement for job hours completed by Boston residents, women, and people of color as established by the [Boston Resident Jobs Policy](#). Under Activity 2, MAPC will research municipal equity and inclusion policies around economic opportunity to ensure labor agreements and employment considerations align with regional and local commitments to racial and social equity.

Research indicates that the construction industry continues to grapple with workforce availability challenges, which have resulted in rising costs in housing design and construction (Nguyen et al., 2020). Off-site construction has emerged as a recognized approach to tackle the diminishing labor force issue by optimizing labor efficiency and productivity (Smith, 2016). Research also indicates that presently nationally, nine percent of the construction labor force comprises women, in contrast to the manufacturing sector, where a 30-percent female workforce is more typical. Offsite manufacturing holds promise for drawing in a workforce that has been less inclined to enter the construction industry as a whole. Further investigation is necessary to ascertain effective strategies for recruiting female and minority demographics into offsite manufacturing employment, thereby enhancing diversity within the labor force. Our strategy includes engagement methods to bring key stakeholders together to identify challenges and opportunities, adding to the local and national body of research around off-site construction.

Furthermore, our proposal will allow our region to accelerate the pace of affordable housing production, allowing for a greater number of low- and moderate- income households to secure safe, stable housing in the region. Through Activity 1, MAPC will reach out to a variety of cities and towns to share information about this project and encourage participation to expand affordable housing across the region. Outreach efforts will hone in on the importance of expanding production of affordable housing in areas with high opportunity.

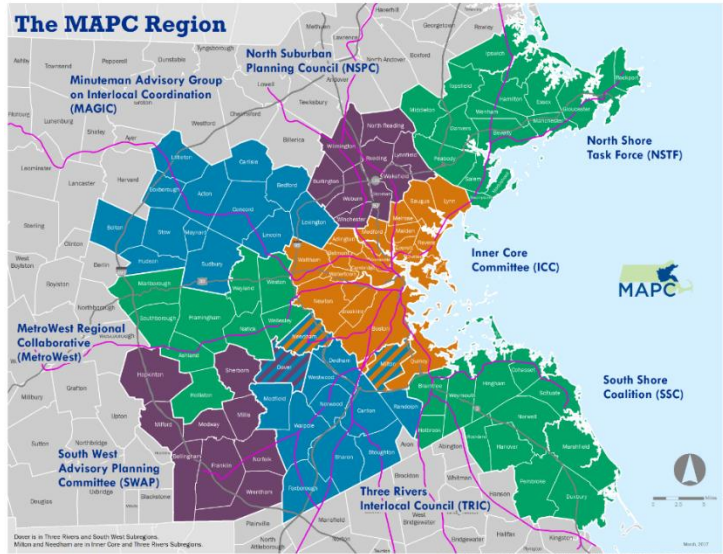
Lastly, when carrying out Activity 2 and assessing potential sites for a new facility(s), transportation equity will be considered. Sites that are accessible by public transportation will be prioritized to expand access to those who may not be able to afford a personal vehicle or expensive transportation costs. Offsite construction jobs may be viewed as more reliable for workers in this regard, since onsite construction sites may or may not be easily accessible and may require workers to pay higher transportation and parking costs to commute to and from work.

Simplification and harmonization of land-use regulations across multiple municipalities

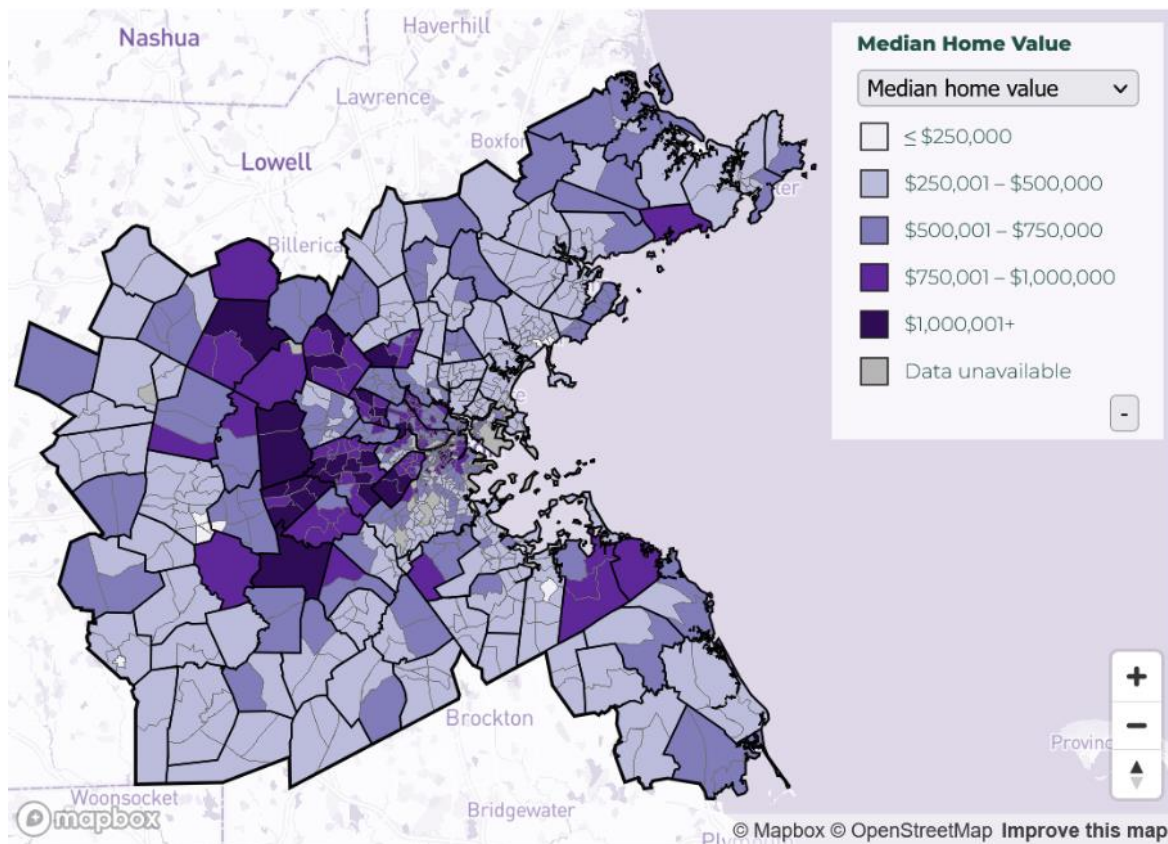
Research into regulatory barriers under Activity 2 will highlight opportunities for regulations to be amended to support modular or prefabricated construction. Particularly, the recommendations will encourage municipalities to adopt similar regulations when possible. Engaging state officials in this conversation can also influence statewide regulations such as building codes.

Geographic Scope

The geographic scope spans multiple geographies. Research and planning activities will focus on the MAPC region, comprised of 101 cities and towns. When possible, MAPC will conduct outreach and engagement through the different geographic subregions, shown in the below map. There will likely be opportunities to apply recommendations and findings across the State of Massachusetts, and state partners involved in the project will help advance these, when possible.

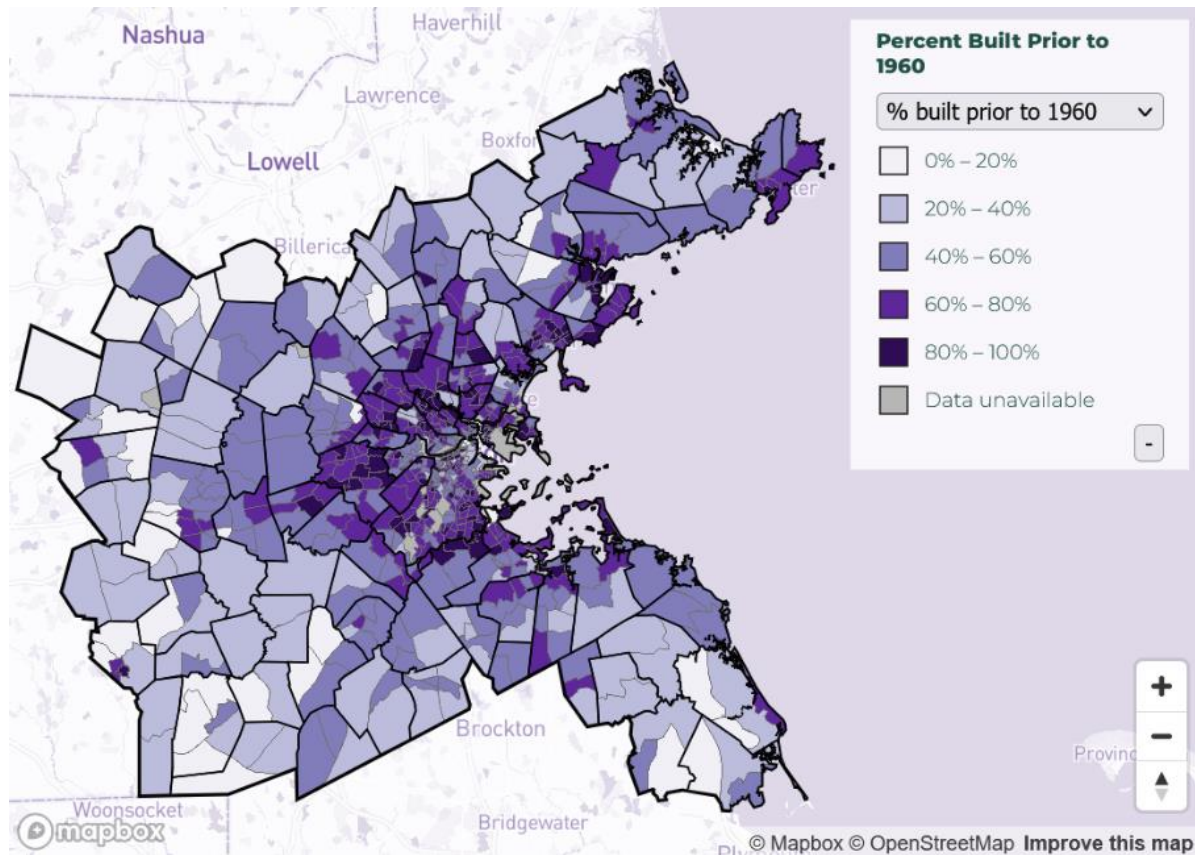


Siting of the new manufacturing facility(s) is likely to occur in one of the cities or towns participating in the Metro Mayors Coalition Housing Task Force. Housing production is most likely to occur in one of the Housing Task Force communities, but cities and towns interested in participating in this project will not be limited to this group of communities. Outreach under Activity 1 will refine the geographic scope for subsequent grant activities.



Producing more housing and finding ways to lower costs and deliver new homes more quickly benefits all of the communities in Greater Boston. As a region, housing is gravely unaffordable (see map below showing median home prices in the MAPC region) and options are severely limited due to exclusionary zoning policies and local opposition to new growth. This project seeks to change public perception of modular and prefabricated housing and show how it can benefit communities and provide much needed affordable housing to low- and moderate-income households.

Research activities embedded in this project will focus on how modular construction can help address the region’s aging housing stock (shown in map below). and create new housing choices as preservation and infill development/redevelopment takes place.



Key Stakeholders and Engagement

As this grant application was prepared, MAPC conducted outreach with cities and towns, partners in labor and workforce development, state housing partners, and subject matter experts in modular and prefabricated construction methods. The full list of potential partners engaged as this proposal was developed is listed below (some of these partners were able to provide letters of support ahead of the application deadline):

- Municipal outreach included Town of Arlington, City of Boston, City of Cambridge, City of Chelsea, City of Everett, City of Newton, City of Somerville, and City of Watertown.

- State housing partner outreach included Massachusetts Housing Partnership, Executive Office of Housing and Livable Communities, and MassHousing.
- Labor outreach included Massachusetts Building Trades Union and Greater Boston Labor Council.
- Housing industry outreach included researchers, subject matter experts, architects, and developers with experience in offsite construction.

If awarded, one of the first grant activities will be doing an in-depth stakeholder mapping exercise to formalize partners and form a Working Group. Once an initial Working Group is formed, MAPC will facilitate another round of stakeholder mapping to potentially expand the Working Group, if necessary, but more importantly, the stakeholder mapping activity will inform a detailed community engagement plan that will be adjusted throughout the project to ensure grant activities are carried out transparently and inclusively. The following list denotes potential stakeholders who are likely to be engaged through this grant project: Persons with unmet housing needs; Residents of public housing or other affordable housing units; Persons from all protected class groups under the Fair Housing Act; Regional and State public agencies that provide funding or technical assistance for housing, transportation, and social services (e.g., Massachusetts Housing Partnership, MassHousing, MassDevelopment, Executive Office of Housing and Livable Communities, Citizens' Housing and Planning Association (CHAPA), etc.); Community organization such as community development organizations and other community-based groups; For-profit and non-profit housing developers; Architects; Community Land Trusts; Housing Authorities; Advocacy organizations; Owners of modular and prefabricated manufacturing facilities; Labor organizations; Construction industry workers; Economic development organizations; Workforce development organizations; and Subject matter experts and researchers focused on offsite construction technologies.

To solicit input from and collaborate with stakeholders in developing this application, MAPC shared the application via [public notice on its website](#), published a blog post, and held a public hearing. The public hearing was held via Zoom on Monday, October 23 at 3pm. MAPC also shared the application with municipal partners, labor representatives, state housing partners, and other allied organizations. The proposal was also shared with subject matter experts focused on offsite construction research. MAPC met individually with several of these different stakeholders to help shape this proposal, and MAPC looks forward to finalizing participating municipalities and continuing to refine the proposal via the PRO Housing Action Plan process, if awarded. Particularly, early engagement with residents of affordable housing will need to be conducted as part of the Action Plan process.

Minimal feedback on the grant proposal was received during the public comment period. The comment provided (see Attachment A) highlighted the differences between offsite and onsite construction and underscore the need for more focused research and investigation to understand the different approaches necessary to make modular construction viable and successful. No comments received required adjustment to the overall project proposal. MAPC looks forward to engaging with those who participated in the public comment period during the next phase of PRO Housing (creating action plans), if awarded funds.

Affirmatively Furthering Fair Housing

As has been demonstrated earlier in this application, Massachusetts is a leader in adopting policies to advance the production of affordable housing and in allocating funds to affordable housing production and preservation. Massachusetts, MAPC, and participating municipalities are committed to affirmatively furthering fair housing. MAPC has worked with many of the participating municipalities to advance local fair housing initiatives. Our proposal seeks to overcome barriers to the production of affordable housing for low- and moderate- income households by tackling both the time it takes to produce new housing units, the cost of building new units, and the disruptive nature of traditional construction methods and impacts to neighboring residents and property owners. By accelerating the pace at which new affordable housing units can be constructed and placed in service, our proposal will increase the supply of affordable housing units in Greater Boston. New units will be marketed and leased in accordance with Fair Housing and AFFH policies in place under each of the participating municipalities (e.g., through the lottery process), which is designed to ensure opportunities are available for underserved communities.

Promoting desegregation

Sadly, because of decades of under-production and loss of rent control policies, the majority of cities and towns across Greater Boston have become “high-cost” communities where it is hard for moderate or low income families to find affordable housing. Affordable housing opportunities in all neighborhoods across Greater Boston are desperately needed. Due to the wide disparity in income and net wealth between white and BIPOC households, neighborhoods lacking housing units affordable to low- and moderate-income households are widely inaccessible to many BIPOC households, fueling segregation. Our proposal promotes desegregation by planning to accelerate the pace with which new affordable housing units can be produced and reducing the cost to construct them.

Expanding housing choice in new parts of the region

Our proposal is designed to ensure that affordable housing units are not concentrated in low-opportunity areas by accelerating the pace at which affordable housing units can be produced and distributed throughout Greater Boston. By producing new housing in a manner that is less disruptive, new affordable units can be placed on infill sites across the region, providing affordable housing opportunities in well-resourced areas that would otherwise be unaffordable to low-and moderate-income households and where neighboring property owners are more likely to oppose new development based on the aforementioned research on neighborhood participation at public meetings. As previously mentioned, this proposal is complemented by the significant zoning reform that is happening concurrently across Greater Boston, where all cities and towns must remove zoning barriers to multi-family housing. These zoning changes will be adopted by 2025 and will make infill development and associated permitting processes much more efficient, due to the removal of zoning barriers.

Addressing unique housing needs

Offsite construction methods are effective at developing housing units to accommodate the unique housing needs of members of protected classes because while the greatest benefits of offsite methods are realized through standardization of unit specifications, individual

customization is part of the design process. As such, units can be designed and built to accommodate the needs of protected classes.

Implementation of fair housing plans

As a regional planning agency, MAPC does not prepare a fair housing plan. MAPC is committed to fair housing, as evidenced in other sections of this proposal. As part of this project, the participating municipalities will supply their fair housing plans under Activity 2 and the Working Group and sub-groups will work to incorporate fair housing recommendations into overall project recommendations to continue commitment to affirmatively furthering fair housing.

Mitigating Risk of Displacement

The use of offsite construction methods would allow us to densify our supply of affordable housing in the region, reducing displacement risk. Our proposal does not directly call for the demolition or rehabilitation of housing units, and we are committed to ensuring that our proposal does not result in the displacement of residents. MAPC will work with the participating municipalities to engage residents of neighborhoods where units may be constructed, to understand displacement concerns and offer solutions to minimize impacts of neighborhood change. The use of modular construction reduces displacement by decreasing the disruptive nature of new construction projects on sites with existing residential units, removing the need for existing residents to move during construction.

Meeting housing needs for residents with disabilities

Offsite construction methods are effective at developing housing units to accommodate the unique housing needs of people with disabilities because while the greatest benefits of offsite methods are realized through standardization of unit specifications, individual customization is part of the design process. As such, units can be designed and built to accommodate the needs of people with disabilities to ensure compliance with the Americans with Disabilities Act (ADA) and accessibility requirements under the Fair Housing Act. Units with design features to accommodate people with disabilities can be manufactured separately from units with standard specifications, the details of which can be arranged with the selected manufacturer. By accelerating the pace at which we can produce new housing units in the region and reach the density of housing units on infill and transit-oriented development sites in close proximity to transportation and supportive services needed to support diverse populations, our proposal will support independent living. Since we anticipate that affordable units produced by the manufacturing facility will be subsidized using City, State, and Federal funds, units will be designed and marketed in accordance with City, State, and Federal regulations.

Implementation of Project

In terms of siting a manufacturing facility or facilities in the region, community and stakeholder engagement throughout all phases of project planning and implementation will be critical to minimize delays and barriers posed by litigation, environmental review, and regulatory/permitting processes, including design review. To minimize hurdles imposed by local permitting requirements, a key activity in our proposal includes studying and streamlining regulatory and permitting pathways for projects developed using offsite construction methods. As a state with an approved third-party inspection infrastructure for plan review and inspection of offsite components, Massachusetts has a favorable regulatory environment for offsite

construction methods. If a manufacturer has been approved by the State, so long as the modules have a State stamp, additional inspection/approval by the local jurisdiction in which the modules are placed is not required. As such, and as has been confirmed by conversations with stakeholders and subject matter experts, communication between approval agencies and education about offsite construction methods is a key hurdle to ensuring a smooth process to shepherd projects through the approvals process.

Equity-informed proposal

MAPC and its partners have committed to advancing racial and social equity. Greater Boston is rich with research, resources, and other educational materials that informed this proposal and our general approach to planning projects overall. Namely, MAPC's State of Equity Policy Agenda is a touchstone for MAPC's work to reduce inequities. Our proposal is also informed by conversations with Boston's Office of Equity and Inclusion, specifically around the development of a strategy to ensure that job opportunities created by the manufacturing facility are equitably distributed to women and people of color.

Supporting minority-, women-, and veteran-owned businesses during the housing production process

Each of the participating communities have local goals and strategies in place to support minority-, women-, and veteran-owned businesses. As part of Activity 2 research, MAPC will collect these policies to inform labor recommendations and standards for the future developer of the manufacturing facility(s). To provide one municipal example, the [Boston Resident Jobs Policy](#) and [Women and Minority Business Owned procurement requirements](#) will be used as model requirements for ensuring that minority-, women-, and veteran-owned businesses are engaged and supported. In developing these W/MBE procurement requirements, the City's Equity and Inclusion Unit engaged hundreds of small and local W/MBE businesses to understand the challenges and barriers that confront them in operating and participating in City contract opportunities. The City ultimately contracted with a consultant to prepare an in-depth disparity study, which found substantial disparities between the availability and utilization of minority- and woman-owned business enterprises in City procurement. As a result, the City established overall annual aspirational goal of 25% minority- and woman-owned business enterprise utilization on discretionary contract and procurement spending, and methods of tracking progress towards these goals.

Other equity considerations for Greater Boston

Research indicates that off-site construction offers a substantial potential to diversify the construction workforce by including women and individuals with fewer skills or employment challenges. This approach has the potential to yield considerable advantages for both families and the environment, including reduced commuting and enhanced job stability. However, there is a substantial knowledge gap that necessitates further research to ascertain optimal methods for recruiting, retaining, and training in this field that we seek to address and research in this proposal.

Evaluation

We will evaluate the effectiveness of our effort by closely monitoring the number of affordable units produced by the facility (by affordability tier), the locations where these units are placed,

and the race and ethnicity of residents in those units. With this information, we will be able to ensure that our effort is effectively allowing for the distribution of affordable housing units across the region, increasing access to high opportunity areas for low- and moderate-income households, and expanding the supply of housing in high-opportunity areas affordable to low- and moderate-income households, the majority of which are BIPOC households.⁶

Budget and Timeline

MAPC requests a total of \$6M over six years. The amount requested by activity is listed below.

Activity		Estimated Timeframe	Requested Amount
1	Convene a Working Group and Sub-Groups	Jan. – June 2024	\$100,000
2	Research and Planning with Four Sub-Groups	Jan. 2024 – July 2025	\$500,000
2.1	Development Pipeline – Grant Funds to match municipal investment (up to \$300,000 per participating municipality, up to 9 municipalities)	Jan. – July 2025	\$2,700,000
3	Preparation and Issuance of Solicitation	July 2025 – March 2026	\$150,000
3.1	Financial Incentive for Solicitation	July 2025 – March 2026	\$2,000,000
4	Solicitation Review and Selection	April 2026 – May 2026	\$50,000
5	Development of Implementation and Phasing Plan	June 2026 – Dec. 2026	\$150,000
6	Support Entitlement/Development of Facility	June 2026 – Dec. 2029	\$100,000
7	Community Engagement	Jan. 2024 – Dec. 2029	\$250,000
Total Requested Grant Funds			\$6,000,000

MAPC, in its role as a regional planning agency that often provides public consulting services to municipal clients, is well-versed in creating realistic and cost-effective budgets to effectively carry out planning and research activities. The bulk of the grant funds will be used as leverage for the incentive package.

If HUD awards a different dollar amount than requested, MAPC is prepared to adjust the scope of work. The minimum funding amount that would allow MAPC and partner communities to carry out this work successfully is \$3M dollars. This would allow for all of the research components to move forward and provide a significant financial incentive for the facility solicitation. If HUD awards the full requested amount, this increases the likelihood of more units being constructed, as it allows for participating municipalities to leverage HUD grant funds against their own local resources to increase the project pipeline aspect of the incentive package.

⁶ 67% of households in Boston earning 80% of AMI or below are BIPOC households. Source: 2017-2021 American Community Survey 5-Year Estimates, PUMS; HUD 2021 income limits.

Exhibit E Capacity / Metropolitan Area Planning Council



Expanding Offsite Construction Technologies

Housing & Urban Development (HUD) Grant Application

Pathways to Removing Obstacles to Housing (PRO Housing) Grant Program

Exhibit E Capacity

MAPC is experienced at managing large federal scopes comparable in size and scope to this project. MAPC received and successfully managed a \$4M HUD grant under the FY2010 Sustainable Communities Regional Planning Grant program. Since that time, MAPC has been awarded large federal grants related to public health, emergency preparedness, economic development, and transportation. MAPC also is the designated Economic Development District for Greater Boston under the Federal Economic Development Administration and regularly coordinates to share and track federal grant opportunities through this program. MAPC's Finance, Legal, and Administrative teams are prepared to administer and track all necessary reporting requirements of this grant program. MAPC is also currently in the process of creating a new position solely to manage administration of federal grants.

Beyond the financial and administrative management of the grant reporting requirements, MAPC's housing team, and specifically the Manager of Housing and Neighborhood Development, has expertise in project management and will lead implementation of the proposed activities, managing the day-to-day work and partner communications. The Manager of Housing and Neighborhood Development will work closely with the entire MAPC housing team, which collectively has experience in federal grant project management, housing planning and policy development, land use regulations, long-range or comprehensive planning, public land disposition for affordable housing, architecture, urban design, development financing (both for-profit and non-profit), and community engagement. Several other MAPC departments will be part of the overall project team:

- MAPC's Land Use team – particularly the Economic Development Division – will be part of the MAPC project team and will work closely with the project manager on grant activities related to workforce development and facility siting.
- MAPC's Data Services team will coordinate data collection and analytical services to support research and planning activities.
- MAPC's Communications team will build a project webpage, project newsletter, and communication materials to share information with stakeholders and interested parties throughout the duration of the project.
- MAPC's Community Engagement team will play a significant role in crafting a community engagement plan, implementing strategies to engage different stakeholders, and evaluating how engagement is going throughout the process. Based on evaluation of

engagement, the community engagement plan may evolve to ensure a variety of different perspectives are heard through the project.

- MAPC's Municipal Collaboration team oversees multiple collective purchasing and procurement programs and has extensive experience facilitating cross-jurisdictional agreements and will be available to advise throughout the project.

MAPC is equipped to carry out this project because MAPC is well-versed in convening a variety of stakeholders to research opportunities and chart paths to implementation. The funding provided by this grant to act as an incentive for a new facility(s) is an opportunity that many cities and towns individually would not be able to offer.

The success of the project does depend on cities and towns working together to assess and present a pipeline of projects to include in an incentive package for the NOFO and RFP. The proposal builds in significant amount of time for MAPC and partnering communities, along with partners at the state, to explore this idea and find different solutions that both 1) work for the participating cities and towns and 2) provide enough of an incentive to attract responses from developers.

Partner Capacity

Participating municipalities will be key partners in this work. As part of the Memorandum of Understanding, each participating jurisdiction will be responsible for identifying the relevant staff members with the needed skills and knowledge to advance this effort. This is presumed to include but is not limited to director-level decision makers, land use and development review planners, inspection staff, GIS specialists, and data analysts. Our ability to successfully design an enticing solicitation to attract a manufacturer depends on the willingness of jurisdictions in our area to work with us to identify a pipeline of projects that could be committed to being produced using the selected manufacturer. We expect to execute a preliminary MOU at the outset of the project that may be modified following completion of our research activities (at which point each jurisdiction will have a clear sense of the projected pipeline of projects).

Massachusetts also has a strong network of housing partners at the state level who we plan to engage in this project. The Executive Office of Housing and Livable Communities, Massachusetts Housing Partnership, and MassHousing are just a few examples of allied organizations who bring housing development and economic development expertise. We anticipate their participation throughout the process, in various capacities from serving on the Working Group to participating in sub-group research activities.

Experience Coordinating Partners

As a regional planning agency, MAPC views regional collaboration and convening at the heart of its mission. MAPC works with municipal partners on local technical assistance projects – more than 100 projects are undertaken by the agency each year. MAPC also convenes subregional groups of municipal staff and officials on a regular basis to share best practices, challenges, and opportunities for collaboration. MAPC also manages several different coalitions of municipal, public, non-profit, and private partners to advocate for policy and legislative positions. An example of one such group is the Metro Mayors Coalition Housing Task Force, which is managed by the MAPC Housing Team (project manager of this grant).

Application Preparation

This application was prepared by a team of MAPC staff and City of Boston staff. The grant application project team included:

Metropolitan Area Planning Council – Staff
Marc Draisen, Executive Director
Lizzi Weyant, Deputy Executive Director
Andrea Harris-Long, AICP, Manager of Housing & Neighborhood Development
Sukanya Sharma, Regional Planner II
City of Boston – Staff
Mayor Michelle Wu
Sheila Dillon, Chief of Housing
Jessica Boatwright, Deputy Director of Neighborhood Housing Development Division
Paige Roosa, Director of the Mayor’s Housing Innovation Lab
Karina Oliver-Milchman, AICP Deputy Director of Policy Development and Research

The staff and decision makers from both organizations coordinated closely throughout the development of this grant proposal, and MAPC plans to continue working closely with City of Boston staff and leadership if the grant is awarded. The grant application writing process demonstrated an excellent partnership between these two organizations, as the PRO Housing grant preparation period was short and required much coordination and collaboration. MAPC looks forward to bringing this team together and expanding to more partners to implement the grant activities successfully.

Experience with civil rights and fair housing issues

MAPC advocates for fair housing issues and supports the advancement of fair housing policy in a variety of ways in Greater Boston. MAPC sits on the Fair Housing Committee coordinated by Citizens’ Housing and Planning Association (CHAPA), a leading housing advocate across the state of Massachusetts. CHAPA’s Fair Housing Committee brings together groups like MAPC and other stakeholders from across the state to intentionally advance fair housing and serve as a place to share information, work on legislation, coordinate efforts, and educate ourselves.

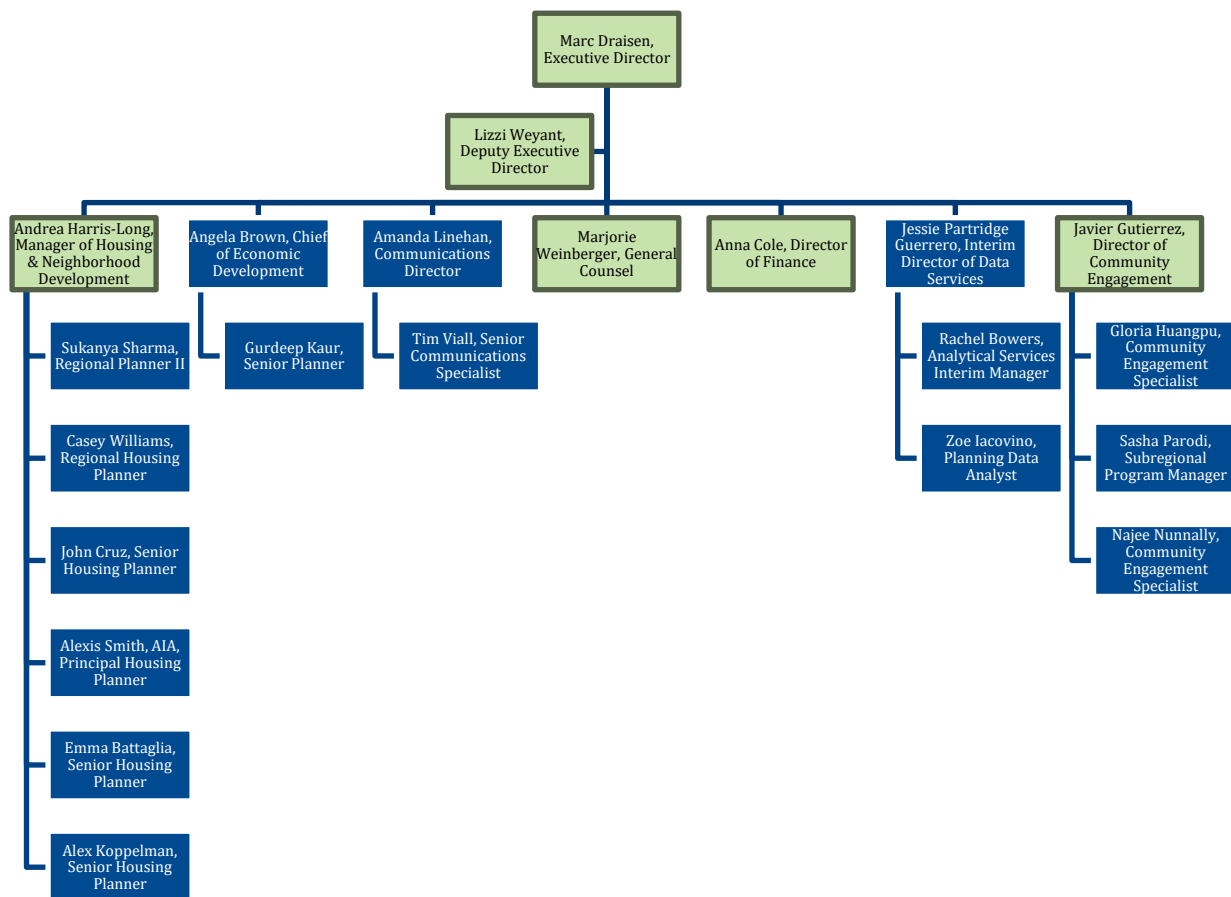
MAPC also regularly works with data to analyze racial and economic disparities. MAPC’s Housing Team regularly analyzes housing metrics by race and social categories to understand where disparities might exist. When identified, MAPC works with our municipal clients to help them create policy and programmatic recommendations to diminish racial and economic disparities. MAPC published a [State of Equity in Metro Boston report, with related Regional Indicators](#), in 2017 that analyzed racial and economic disparities and highlighted policy interventions needed to make the region more equitable.

Many cities and towns in Greater Boston recognize the vast racial and social disparities that exist in our region, and many have begun taking action to better understand and address these. For example, the City of Boston regularly compiles data to analyze racial and economic disparities to ensure compliance with policies designed to eliminate them, including the [Boston Resident Jobs Policy](#) and [Women and Minority Business Owned procurement requirements](#). The City of Boston’s [Fair Housing Commission](#) enforces the City’s Fair Housing Regulations. The following

resources provide a few recent examples of resources produced by the Policy Development and Research team in the Boston Mayor’s Office of Housing:

- Analysis of BIPOC Households by AMI:
https://docs.google.com/spreadsheets/d/1nK_erOJCM-LUo7qxjPvwli1ACaPPd45eEmAM9e6pPI/edit?usp=sharing;
- Boston Housing Conditions Report:
<https://www.bostonplans.org/getattachment/066b23c5-cab9-4731-a338-f6e57e3ef55f>

Organizational Chart



The above organizational chart identifies the names and positions of key project team members for administering the grant activities. Positions in green boxes indicate key management roles. At least 21 full-time staff members will be working to implement or report/track grant activities at

any given time during the grant period. At this time, there are no vacancies on the project team, nor are there any positions that are contingent on the award.

Experience Promoting Racial Equity

MAPC and partners have extensive experience working with underserved communities, particularly Black and Brown communities. MAPC's Equity Team, a core group of individuals from across various departments, works across the agency to operationalize equity in project work. This framework will be applied to the grant activities. MAPC's Community Engagement team is also nationally recognized for applying innovative techniques to engage hard to reach communities. Their involvement in Activity 7 and throughout the project will ensure that project elements and engagement are designed to advance racial equity and are inclusive and equitable.

Exhibit F Leverage / Metropolitan Area Planning Council



Metropolitan Area Planning Council

Expanding Offsite Construction Technologies

Housing & Urban Development (HUD) Grant Application

Pathways to Removing Obstacles to Housing (PRO Housing) Grant Program

Exhibit F Leverage

At this time, no formal commitments have been leveraged for this application. However, the proposal expects that participating municipalities will leverage resources against the grant funds to provide the development pipeline aspect of the solicitation. These leveraged resources may take the form of monetary commitments, publicly-owned land, waived fees, or other benefits. Activity 2 includes an in-depth process to review resources available to cities and towns and tradeoffs for different methods of providing a development pipeline.

Exhibit G Long-Term Effects and Outcomes / Metropolitan Area Planning Council



Expanding Offsite Construction Technologies

Housing & Urban Development (HUD) Grant Application

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Exhibit G Long-Term Effects and Outcomes

This project presents an immense opportunity for Greater Boston to expand the local construction industry and embrace alternative construction technologies that can complement onsite construction methods to meet housing and climate goals in a more timely and cost-efficient manner. If awarded, this project will set Greater Boston on a new trajectory, with labor organizations at the table, to collectively find ways to allow onsite construction methods to continue while also making room for different options, particularly in neighborhoods where infill development and smaller-scale housing options are better suited for offsite methods and less appealing for traditional contractors. We see a variety of permanent, long-term effects and outcomes beyond the grant period ending in 2030. If successful, we will have greatly reduced key barriers to producing and preserving affordable housing and have measurable outcomes to show HUD and other regions across the nation.

Upon completion of the grant-funded activities, we hope to be the first metropolitan planning agency to successfully execute a coordinated strategy working across municipal boundaries to pool production demand for an offsite construction manufacturing facility to serve our region’s desperate need for the rapid production of high-quality affordable housing units.

Deliverables

Deliverables associated with each activity anticipated to take place during the grant period are described below:

Activity	Anticipated Deliverables*
1	Working Group Objectives, Agendas, and Meeting Schedule; Memorandums of Understanding; Partner Agreements
2	Four research reports on the following topics: Addressing regulatory barriers to offsite construction in participating municipalities; Generating a project pipeline to support a regional manufacturing facility; Creating workforce development opportunities; and Identifying suitable sites in the region for a manufacturing facility or facilities Amended MOUs, if necessary Webinars or other communication materials to share research findings with broader network of housing professionals
3	Solicitation for manufacturing facility, including incentive package

4	Scoring rubric for selection committee; developer selection notification memorandum; developer designation memorandum; letter committing funds for the construction of the facility
5	Plan detailing the order in which development projects will be submitted for manufacturing (informed by Activity 2 deliverables)
6	Development progress reports; permits and certification of occupancy for manufacturing facility
7	Focus group/interview protocols; communication materials include project webpage, project newsletter, one-pagers, social media assets; public campaign for educating about alternative construction technologies

*Additional deliverables will likely result as work gets underway. This outlines the bare minimum, and in the case of engagement/communication materials, a sampling of what may result. Throughout the project, we hope to share information about research findings and project milestones, to serve as resources for HUD and others in the housing field across the country.

Potential roadblocks

We recognize that, throughout the nation, opposition to modular housing often includes concerns of residents (quality/aesthetic concerns) and the construction trades (job loss/job quality concerns). Of course, these concerns may challenge the success of our proposal, but it is also our responsibility and intent to listen to these concerns carefully and to make sure all legitimate concerns are addressed. In our preliminary research into offsite construction methods as part of the process of preparing this grant proposal, we started engaging members of the construction trades. Our proposal seeks to address their concerns, in part, by focusing on infill housing development projects, which tend to be of a scale that would not compete with projects in which construction trades are typically involved. We also hope to have continued engagement with labor representatives as we see offsite construction methods complementing their work rather than replacing it. MAPC and its partner municipalities would not consider this project a success if local jobs were lost – instead, we are committed to finding ways to increase the diversity of jobs in the construction field to attract more diverse workers with good jobs, pay, benefits, and worker protections. The project also includes a robust community engagement component to combat public perception against modular or prefabricated housing types.

Reducing housing cost burden

By accelerating the pace at which new affordable housing units can be constructed and placed in service, our proposal will increase the supply of affordable housing units in Greater Boston, reducing the exorbitant number of households that are currently housing cost-burdened. (In Boston alone, 40 percent of households are cost-burdened, and 20 percent of households are severely cost-burdened.¹) Furthermore, with a focus on infill development, our strategy will allow us to densify housing in areas that are transit- and resource-rich, further decreasing costs of other necessary household expenses and providing access to jobs, schools, libraries, and other amenities that increase quality of life.

Providing a model for other communities

We are excited to put forth this proposal as a regional planning agency because the problems caused by a shortage of affordable housing units are not isolated to one city or town but constitute a regional challenge requiring regional solutions. The deference given to local municipalities to adopt their own land use and regulatory frameworks creates challenges to

¹ American Community Survey, 2017-2021, Five-Year Estimates.

regional coordination and tackling regional problems such as the supply of affordable housing. Local governments are uniquely positioned to project future housing needs and a pipeline of projects to support the location of a nearby manufacturing facility. We hope that this proposal can serve as a model for regions across the country who face similar challenges to regional coordination and have an acute need for affordable housing.

Environmental Risks

As a coastal region, Greater Boston is more likely to be impacted by climate change through rising sea levels and severe weather events that cause flooding, extreme heat, and other natural disasters. MAPC regularly works with its 101 cities and towns to enact climate resiliency plans, hazard mitigation plans, and climate action plans (which include mitigation and adaptation strategies). Housing planning through Greater Boston takes into account our region's need to locate housing in areas with the least flooding risk and build more energy-efficient and resilient homes. These regional and local climate-related policies will be evaluated under Activity 2 and inform recommendations for potential modular developments and a manufacturing facility to maximize resiliency and energy efficiency.

Immediate Success

In the immediate term, success of our proposal will be a high-functioning, sustainable manufacturing facility that produces both high-quality, affordable housing units as well as safe and stable jobs for local residents.

Long-Term Effect on Removing Barriers to Affordable Housing Production

In the long-term, the success of our proposal will be a less severe affordable housing shortage and decreased societal ills that result from such a shortage. There will be a more balanced supply of housing units affordable to households at a range of income levels as a result of our increased capacity to produce these units (and revised regulatory frameworks mandating the placement of these units across cities and town due to the passage of progressive policies at the State and local level to mandate a more balanced supply of affordable housing throughout the region, and not in concentrated neighborhoods or cities and towns). Fewer households will be cost-burdened, and a smaller share of our housing units will be overcrowded. Cities and towns in our region will be less segregated, BIPOC households will have greater access to well-resourced areas to allow for advancement in educational attainment, unlocking better quality and higher-paying jobs, and narrowing the racial wealth gap. All of these effects will result in an increased quality of life for residents in our region.

Secondary to accelerating the pace of construction of new affordable housing units to address an immediate need for more affordable housing units in well-resourced areas of our region, our proposal also seeks to further innovate in the building technology space. The Boston metropolitan area has long been a leader in the advancement of technology and research, due in large part to the concentration of the country's top academic institutions and associated research labs. There is tremendous opportunity for innovation in the offsite construction space in collaboration with colleges and universities in the region. This innovation will be complemented by progressive and high expectations for the types of jobs that result from new and emerging technologies.



Metropolitan Area Planning Council

Expanding Offsite Construction Technologies

Housing & Urban Development (HUD) Grant Application

Pathways to Removing Obstacles to Housing (PRO Housing) Grant Program

Attachment A – Summary of Public Comments

Name	Organization/Affiliation	Comment
Hans Porschitz	Bensonwood	With the proposal, acknowledgement of 2 main topics is important to include: Building offsite requires a completely different approach to both design and construction principles to be successful; previously failed endeavors like Integra or Katerra put focus on construction/offsite manufacturing, but without enough focus to change the design and engineering process along with it; The term affordable seems to refer to initial construction cost and the resulting assumed cost for rent; But market rates most often do not give full credit for the lower cost construction; More reliable affordability could be achieved by focus on lower (and more fixed) utility cost over the duration of the buildings life span if the building was built to higher insulation specifications; many of the recent state programs acknowledge this need, and it should be made a major contributing factor in this proposal as well.

Grant Application Detailed Budget Worksheet

OMB Approval No. 2501-0017
Expiration: 1/31/2026

Applicant Name:	Metropolitan Area Planning Council
Applicant Address:	60 Temple Place
	Boston, MA 02111

Category				Detailed Description of Budget (for full grant period)							
	Estimated Hours	Rate per Hour (Loaded hourly rate)	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
1. Personnel (Direct Labor)											
Manager of Housing	2,010	\$100.00	\$201,000	\$201,000							
Principal Housing Planner	1,750	\$100.00	\$175,000	\$175,000							
Senior Housing Planner	1,700	\$100.00	\$170,000	\$170,000							
Senior Land Use Planner	1,900	\$100.00	\$190,000	\$190,000							
Senior Economic Development Planner	1,300	\$100.00	\$130,000	\$130,000							
Legal Counsel/Procurement Specialist	725	\$100.00	\$72,500	\$72,500							
Community Engagement Specialist	568	\$100.00	\$56,800	\$56,800							
Manager of Economic Development	800	\$100.00	\$80,000	\$80,000							
Data Analyst	600	\$100.00	\$60,000	\$60,000							
Total Direct Labor Cost			\$1,135,300								
2. Fringe Benefits											
	Rate (%)	Base	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Total Fringe Benefits Cost											
3. Travel											
3a. Transportation - Local Private Vehicle											
	Mileage	Rate per Mile	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Trans - Local Private Vehicle											
3b. Transportation - Airfare (show destination)											
	Trips	Fare	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income

Previous versions of HUD-424-CBW are obsolete.

Grant Application Detailed Budget Worksheet

OMB Approval No. 2501-0017
Expiration: 1/31/2026

Applicant Name: Metropolitan Area Planning Council											
Subtotal - Transportation - Airfare											
3c. Transportation - Other	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Visits to modular sites	3	\$7,000.00	\$21,000	\$21,000							
Visit to modular manufacturing facility	2	\$25,000.00	\$50,000	\$50,000							
Visits to potential development sites	9	\$7,000.00	\$63,000	\$63,000							
Subtotal - Transportation - Other			\$134,000								
3d. Per Diem or Subsistence (indicate location)	Days	Rate per Day	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Per Diem or Subsistence											
Total Travel Cost			\$134,000								
4. Equipment (Only items over \$5,000 Depreciated value)	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Total Equipment Cost											
5. Supplies and Materials (Items under \$5,000 Depreciated Value)											
5a. Consumable Supplies	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Refreshments for engagement events	10	300	\$3,000	\$3,000							
Refreshments for working group/sub-group meetings	48	\$150	\$7,200	\$7,200							
Subtotal - Consumable Supplies			\$10,200								
5b. Non-Consumable Materials	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Non-Consumable Materials											

Grant Application Detailed Budget Worksheet

OMB Approval No. 2501-0017
Expiration: 1/31/2026

Applicant Name: Metropolitan Area Planning Council											
Total Supplies and Materials Cost			\$10,200								
6. Consultants (Type)	Days	Rate per Day	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Total Consultants Cost											
7. Contracts and Sub-Grantees (List individually)											
7a. Contracts	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Contracts											
7b. Sub-Grantees (List individually)	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Sub-Grantees											
Total Contracts and Sub-Grantees Cost											
8. Construction Costs											
8a. Administrative and legal expenses	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Administrative and legal expenses											
8b. Land, structures, rights-of way, appraisal, etc	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Land, structures, rights-of way, ...											

Grant Application Detailed Budget Worksheet

OMB Approval No. 2501-0017
Expiration: 1/31/2026

Applicant Name: Metropolitan Area Planning Council											
	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
8c. Relocation expenses and payments											
Subtotal - Relocation expenses and payments											
8d. Architectural and engineering fees											
Subtotal - Architectural and engineering fees											
8e. Other architectural and engineering fees											
Subtotal - Other architectural and engineering fees											
8f. Project inspection fees											
Subtotal - Project inspection fees											
8g. Site work											
Subtotal - Site work											
8h. Demolition and removal											
Subtotal - Demolition and removal											
8i. Construction											
Subtotal - Construction											

Grant Application Detailed Budget Worksheet

OMB Approval No. 2501-0017
Expiration: 1/31/2026

Applicant Name: Metropolitan Area Planning Council											
	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
8j. Equipment											
Subtotal - Equipment											
8k. Contingencies											
Subtotal - Contingencies											
8l. Miscellaneous											
Grant Funds to Municipality for creating development pipeline	9	300,000	\$2,700,000	\$2,700,000							
Incentive for Facility Solicitation	1	2000000	\$2,000,000	\$ 2,000,000.00							
Subtotal - Miscellaneous											
Total Construction Costs			\$4,700,000								
9. Other Direct Costs											
Item											
Gift card incentives for engagement	150	50	\$7,500	\$7,500							
Modular Training Opportunities	3	1000	3000	\$3,000							
Printing/translation costs for communication materials	1	10000	\$10,000	\$10,000							
Total Other Direct Costs			\$20,500								
Subtotal of Direct Costs			\$20,500								
10. Indirect Costs											
Type	Rate	Base	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income

Grant Application Detailed Budget Worksheet

OMB Approval No. 2501-0017
Expiration: 1/31/2026

Applicant Name: Metropolitan Area Planning Council												
Total Indirect Costs												
Total Estimated Costs			\$ 6,000,000.00	\$ 6,000,000.00								

Grant Application Detailed Budget Worksheet	OMB Approval No. 2501-0017 Expiration: 1/31/2026
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Detailed Description of Budget		
Analysis of Total Estimated Costs	Estimated Cost	Percent of Total
1 Personnel (Direct Labor)	1,135,300.00	18.9%
2 Fringe Benefits	0.00	0.0%
3 Travel	134,000.00	2.2%
4 Equipment	0.00	0.0%
5 Supplies and Materials	10,200.00	0.2%
6 Consultants	0.00	0.0%
7 Contracts and Sub-Grantees	0.00	0.0%
8 Construction	4,700,000.00	78.3%
9 Other Direct Costs	20,500.00	0.3%
10 Indirect Costs	0.00	0.0%
Total:	6,000,000.00	100.0%
Federal Share:	6,000,000.00	
Match (Expressed as a percentage of the Federal Share):	0	

This form is to be used to provide detailed budget information regarding your proposed program. If your program requires you to provide program activity information you should use a separate HUD-424-CBW to provide information related to each program activity. The detailed information provided on this form can be summarized on the HUD-424-CB form by checking the "All Years" box at the top of the form and inputting the summary information.

Item	Discussion
1 - Personnel (Direct Labor)	<p>This section should show the labor costs for all individuals supporting the grant program effort (regardless of the source of their salaries). The hours and costs are for the full life of the grant. If an individual is employed by a contractor or sub-grantee, their labor costs should not be shown here.</p> <p>Please include all labor costs that are associated with the proposed grant program, including those costs that will be paid for with in-kind or matching funds.</p> <p>Do not show fringe or other indirect costs in this section.</p> <p>Please use the hourly labor cost for salaried employees (use 2080 hours per year or the value your organization uses to perform this calculation). An employee working less than full time on the grant should show the numbers of hours they will work on the grant.</p>
2 - Fringe Benefits	<p>Use the standard fringe rates used by your organization. You may use a single fringe rate (a percentage of the total direct labor) or list each of the individual fringe charges. The spreadsheet is set up to use the Total Direct Labor Cost as the base for the fringe calculation. If your organization calculates fringe benefits differently, please use a different base and discuss how you calculate fringe as a comment.</p>
3 - Travel	
3a - Transportation - Local Private Vehicle	<p>If you plan on reimbursing staff for the use of privately owned vehicles or if you are required to reimburse your organization for mileage charges, show your mileage and cost estimates in this section.</p>
3b - Transportation - Airfare	<p>Show the estimated cost of airfare required to support the grant program effort. Show the destination and the purpose of the travel as well as the estimated cost of the tickets.</p> <p>Each program notice of funding opportunity (NOFO) discusses the travel requirements that should be listed here.</p>
3c - Transportation - Other	<p>If you or are charged monthly by your organization for a vehicle for use by the grant program, indicate those costs in this section.</p> <p>Provide estimates for other transportation costs that may be incurred (taxi, etc.).</p>
3d - Per Diem or Subsistence	<p>For travel which will require the payment of subsistence or per diem in accordance with your organization's policies. Indicate the location of the travel.</p> <p>Each program NOFO discusses the travel requirements that should be listed here.</p>
4 – Equipment	<p>"Equipment" means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost that equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000.</p> <p>Each program NOFO describes what equipment may be purchased using grant funding.</p>
5 - Supplies and Materials	<p>"Supplies" means all tangible personal property other than those described in the definition of equipment. A computing device is a supply if the acquisition cost is less than the lesser of the capitalization level established by the non-Federal entity for financial statement purposes or \$5,000, regardless of the length of its useful life.</p> <p>List the proposed supplies and materials as either Consumable Supplies or as Non-Consumable Materials.</p>
5a - Consumable Supplies	<p>List the consumable supplies you propose to purchase. General office or other common supplies may be estimated using an anticipated consumption rate.</p>
5b - Non-consumable materials	<p>List furniture, computers, printers, and other items that will not be consumed in use. Please list the quantity and unit cost.</p>
6 – Consultants	<p>Indicate the consultants you will use. Indicate the type of consultant (skills), the number of days you expect to use them, and their daily rate.</p>
7 - Contracts and Subgrantees Za - Contracts Zb - Subgrantees	<p>List the contractors and sub-grantees that will help accomplish the grant effort. Examples of contracts that should be shown here include contracts with Community Based Organizations; liability insurance; and training and certification for contractors and workers.</p> <p>If any contractor, sub-contractor, or sub-grantee is expected to receive over 10% of the total Federal amount requested, a separate Grant Application Detailed Budget (Worksheet) should be developed for that contractor or sub-grantee and the total amount of their proposed effort should be shown as a single entry in this section.</p> <p>Unless your proposed program will perform the primary grant effort with in-house employees (which should be listed in section 1), the costs of performing the primary grant activities should be shown in this section.</p> <p>Types of activities which should be shown in this section:</p> <ul style="list-style-type: none"> · Contracts for all services · Training for individuals not on staff

	<ul style="list-style-type: none"> · Contracts with Community Based Organizations or Other Governmental Organizations (note the 10% requirement discussed above) · Insurance if your program will procure it separately <p>Please provide a short description of the activity the contractor or subgrantee will perform, if not evident.</p>
8 – Construction Costs	
8a – Administrative and legal expenses	Enter estimated amounts needed to cover administrative expenses. Do not include costs that are related to the normal functions of government.
8b – Land, structures, rights-of way, appraisal, etc.	Enter estimated site and right(s)-of-way acquisition costs (this includes purchase, lease, and/or easements).
8c – Relocation expenses and payments	Enter estimated costs related to relocation advisory assistance, replacement housing, relocation payments to displaced persons and businesses, etc.
8d – Architectural and engineering fees	Enter estimated basic engineering fees related to construction (this includes start-up services and preparation of project performance work plan).
8e – Other architectural and engineering fees	Enter estimated engineering costs, such as surveys, tests, soil borings, etc.
8f – Project inspection fees	Enter estimated engineering inspection costs.
8g – Site work	Enter the estimated site preparation and restoration costs that are not included in the basic construction contract.
8h – Demolition and removal	Enter the estimated costs related to demolition activities.
8i – Construction	Enter estimated costs of the construction contract.
8j - Equipment	Enter estimated cost of office, shop, laboratory, safety equipment, etc. to be used at the facility, if such costs are not included in the construction contract.
8k – Contingencies	Enter any estimated contingency costs.
8l – Miscellaneous	Enter estimated miscellaneous costs.
9 - Other Direct Costs	<p>Other Direct Costs include a number of items that are not appropriate for other sections.</p> <p>Other Direct Costs may include:</p> <ul style="list-style-type: none"> · Staff training · Telecommunications · Printing and postage <p>Relocation, if costs are paid directly by your organization (if relocation costs are paid by a subgrantee, it should be reflected in Section 7)</p>
10 - Indirect Costs	<p>Indirect costs (including Facilities and Administration costs) are those costs that have been incurred for common or joint purposes. These costs benefit more than one cost objective and cannot be readily identified with a particular final cost objective without effort disproportionate to the results achieved.</p> <p>Indicate your approved Indirect Cost Rate (if any) and calculate the indirect costs in accordance with the terms of your approved indirect cost rate and enter the resulting amount. Also show the applicable cost base amount and identify the proposed cost base type.</p>
Total Estimated Costs	Enter the grand total of all the applicable columns.
The eight rightmost columns allow you to identify how the costs will be spread between the HUD Share and other contributors (including Match funds and Program Income). This information will help the reviewers better understand your program and priorities.	

PRO HOUSING CERTIFICATIONS FOR MULTIJURISDICTIONAL ENTITY APPLICANTS

Metropolitan Area Planning Council (MAPC) certifies that:

Affirmatively Further Fair Housing -- The jurisdiction(s) will affirmatively further fair housing.

The Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended (URA) -- It will comply with the acquisition and relocation requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, (42 U.S.C. 4601-4655) and implementing regulations at 49 CFR Part 24.

Anti-Lobbying -- To the best of the jurisdictions' knowledge and belief:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of it, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement;
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, it will complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions; and
3. It will require that the language of paragraph 1 and 2 of this anti-lobbying certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

Authority of Jurisdiction(s) -- The submission of the PRO Housing application is authorized under State and local law (as applicable) and the jurisdiction(s) possesses the legal authority to carry out the programs for which it is seeking funding, in accordance with applicable HUD regulations.

Consistency with plan -- If any member(s) of the multijurisdictional entity applicant is a recipient of funding under Title I of the Housing and Community Development Act of 1974, the entity certifies that the housing activities to be undertaken with PRO Housing funds are consistent with the strategic plan in the jurisdictions' consolidated plan.

Section 3 -- It will comply with section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) and implementing regulations at 24 CFR Part 75.

Build America, Buy America (BABA) – It will comply with Title IX, Subpart A of the Infrastructure Investment and Jobs Act of 2021 (41 U.S.C. 8301 et seq.).

Public Participation – It is in full compliance with the PRO Housing streamlined public participation requirements found in Section VI.E of the PRO Housing NOFO.

Community Development Plan -- If any member(s) of the multijurisdictional entity applicant is a recipient of funding under Title I of the Housing and Community Development Act of 1974, the entity certifies that its consolidated plan identifies community development and housing needs and specifies both short-term and long-term community development objectives that have been developed in accordance with the primary objective of the CDBG program (i.e., the development of viable urban communities, by providing decent housing and expanding economic opportunities, primarily for persons of low and moderate income) and requirements of 24 CFR parts 91 and 570.

Use of Funds -- It has complied with the following criteria:

1. Maximum Feasible Priority. With respect to activities expected to be assisted with PRO Housing funds, it has developed its proposal so as to give maximum feasible priority to activities which benefit low- and moderate-income families or aid in the prevention or elimination of slums or blight. The proposal may also include activities which the grantee certifies are designed to meet other community development needs having particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community, and other financial resources are not available (see Optional PRO Housing Certification).
2. Overall Benefit. The aggregate use of PRO Housing funds shall principally benefit persons of low and moderate income in a manner that ensures that at least 70 percent of the amount is expended for activities that benefit such persons.
3. Special Assessments. It will not attempt to recover any capital costs of public improvements assisted with PRO Housing funds by assessing any amount against properties owned and occupied by persons of low and moderate income, including any fee charged or assessment made as a condition of obtaining access to such public improvements.

However, if PRO Housing funds are used to pay the proportion of a fee or assessment that relates to the capital costs of public improvements (assisted in part with PRO Housing funds) financed from other revenue sources, an assessment or charge may be made against the property with respect to the public improvements financed by a source other than PRO Housing funds.

In addition, in the case of properties owned and occupied by moderate-income (not low-

income) families, an assessment or charge may be made against the property for public improvements financed by a source other than PRO Housing funds if the jurisdiction certifies that it lacks PRO Housing funds to cover the assessment.

Excessive Force -- Each member State or local government has adopted and is enforcing:

1. A policy prohibiting the use of excessive force by law enforcement agencies within its jurisdiction against any individuals engaged in non-violent civil rights demonstrations; and
2. A policy of enforcing applicable State and local laws against physically barring entrance to or exit from a facility or location which is the subject of such non-violent civil rights demonstrations within its jurisdiction.

Compliance with Anti-discrimination laws -- The grant will be conducted and administered in conformity with title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d) and the Fair Housing Act (42 U.S.C. 3601-3619) and implementing regulations.

Lead-Based Paint -- Its activities concerning lead-based paint will comply with the requirements of 24 CFR part 35, subparts A, B, J, K and R; and EPA's lead-based paint rules (e.g., Repair, Renovation and Painting; Pre-Renovation Education; and Lead Training and Certification (40 CFR part 745)).

Compliance with RFRA -- The grant will be conducted and administered in conformity with the requirements of the Religious Freedom Restoration Act (42 U.S.C. 2000bb) and 24 CFR 5.109, allowing the full and fair participation of faith-based entities.

Compliance with Laws -- It will comply with applicable laws.



Elizabeth Weyant _____

11/6/2023 _____

Signature of Authorized Official

Date

Deputy Director, MAPC _____

Title

Attachment D: Letters of Support

Letters from Municipal Partners

- City of Boston
- City of Everett
- City of Newton



CITY OF BOSTON • MASSACHUSETTS

MAYOR'S OFFICE OF HOUSING
MICHELLE WU, MAYOR

Date: October 25, 2023
Subject: **Municipal Partner Support Letter for the Metropolitan Area Planning Council (MAPC) HUD PRO Housing Grant Proposal**
Partner: The Mayor's Office of Housing, City of Boston
12 Channel Street, 9th Floor, Boston, MA 02210
<https://www.boston.gov/departments/housing>
Submitted to: U.S. Department of Housing and Urban Development (HUD)
Community Planning and Development
Pathways to Removing Obstacles to Housing (PRO Housing) FR-6700-N-98

Dear Review Committee:

The City of Boston is pleased to join the Metropolitan Area Planning Council (MAPC) and peer jurisdictions to accelerate housing production, increase affordability, and advance fair housing in Greater Boston through exploration and planning for the expansion of a modular housing ecosystem in the region. We are confident that the work plan described in MAPC's proposal will strengthen our ability to efficiently expand our supply of affordable housing while creating economic and workforce development opportunities, both of which are key City objectives.

The Metropolitan Area Planning Council is uniquely qualified to serve as the lead applicant on this grant given their extensive experience convening stakeholders, conducting research, and implementing plans and solutions to regional planning challenges. If awarded these funds, we look forward to serving as a partner municipality to accomplish the proposed scope of work, including overcoming regulatory barriers and working collaboratively with surrounding municipalities to generate a project pipeline to support a regional manufacturing facility and create local jobs.

Thank you for your consideration of our proposal. Please do not hesitate to contact me should you have any questions or require additional information.

Sincerely,

Sheila Dillon

Chief of Housing

(617) 635-4353

sheila.dillon@boston.gov





CARLO DeMARIA
MAYOR

CITY OF EVERETT - OFFICE OF THE MAYOR

484 Broadway Everett, Massachusetts 02149

☎ 617-394-2270

✉ mayorcarlo.demaria@ci.everett.ma.us

Date: November 6, 2023

Subject: **Partner Support Letter for the Metropolitan Area Planning Council (MAPC) HUD PRO Housing Grant Proposal**

Partner: City of Everett
Mayor Carlo DeMaria
484 Broadway, Everett, MA 02149
<https://cityofeverett.com/>

Submitted: U.S. Housing and Urban Development (HUD)

To: Community Planning and Development (CPD)

Pathways to Removing Obstacles to Housing (PRO Housing) FR-6700-N-98

Dear Review Committee,

The City of Everett is pleased to join with the Metropolitan Area Planning Council (MAPC) in an effort to increase the tools available to facilitate more housing production in Metro Boston's municipalities with an aim to advance fair housing. Not only will a project such as "Pathways to Removing Obstacles to Housing" assist with the creation of affordable housing, something many municipalities in the Commonwealth are in dire need of, but the method by which the housing units are created also generate jobs with solid pay and benefits for local labor. This holistic approach of coupling housing production and economic development opportunities is what excites us about MAPC's proposal, and we are committed to working cooperatively with MAPC in this endeavor to expand a modular housing ecosystem in Greater Boston.

If awarded, we will serve as a partner municipality. Through this role, we commit to participating actively in the Working Group and the sub-groups outlined in the proposal to identify regulatory barriers, identify a development pipeline, research and find ways to ensure good jobs for local residents are provided as alternative construction technologies are explored, and explore sites for a new manufacturing facility.

We strongly support the Metropolitan Area Planning Council as the lead applicant responsible for carrying out these grant activities, as they have extensive experience convening stakeholders, conducting research, and implementing findings. We look forward to this new opportunity to work with MAPC and other municipalities to explore offsite construction methods.

Thank you for considering our commitment to this important program, and please do not hesitate to reach out to us for any further information or clarification.

Regards,

A handwritten signature in blue ink that reads "Carlo De Maria". The signature is written in a cursive style with a large initial "C" and a distinct "De" before "Maria".

Carlo DeMaria
Mayor



Ruthanne Fuller
Mayor

City of Newton, Massachusetts
Department of Planning and Development
1000 Commonwealth Avenue Newton, Massachusetts 02459

Telephone
(617) 796-1120
Telefax
(617) 796-1142
TDD/TTY
(617) 796-1089
www.newtonma.gov

Barney Heath
Director

Date: November 6, 2023

Subject: **Partner Support Letter for the Metropolitan Area Planning Council (MAPC) HUD PRO Housing Grant Proposal**

Partner: City of Newton
Mayor Ruthanne Fuller
1000 Commonwealth Avenue
Newton, MA 02459
www.newtonma.gov

Submitted: U.S. Housing and Urban Development (HUD)
To: Community Planning and Development (CPD)
Pathways to Removing Obstacles to Housing (PRO Housing) FR-6700-N-98

Dear Review Committee,

As Mayor of the City of Newton, we are pleased to join with the Metropolitan Area Planning Council (MAPC) in an effort to increase the tools available to facilitate housing production in Metro Boston's municipalities via modular housing. Newton is committed to maintaining our economic diversity with housing affordable to low- and moderate-income households. We look forward to working with MAPC to expand the modular housing ecosystem in Greater Boston. Modular housing has been used with great success in Newton in both a for-profit development (28 Austin Street Apartment building) and a non-profit affordable housing development (263 Auburn Street, which used modular housing to provide new family and group home units). This grant proposal provides an opportunity in Newton for another means to provide affordable housing.

If awarded, we will serve as a partner municipality. In this role, we commit to participating actively in the Working Group and the sub-groups outlined in the proposal to identify regulatory barriers, create a development pipeline, research and find ways to ensure that good jobs are available to residents as alternative construction technologies are explored, and explore sites for a new manufacturing facility.

We strongly support the Metropolitan Area Planning Council as the lead applicant responsible for carrying out these grant activities as they have extensive experience convening stakeholders, conducting research, and implementing findings. We look forward to this new opportunity to work with MAPC and other municipalities to explore offsite construction methods.

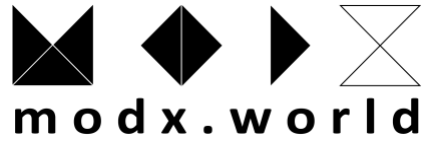
Thank you for considering this important program, and please do not hesitate to reach out to us for any further information or clarification.

Mayor Ruthanne Fuller

Ruthanne Fuller, Mayor
City of Newton

Letters of Support from Subject Matter Experts

- MOD X Advisory LLC
- Center for Real Estate, Massachusetts Institute of Technology
- International Code Council (ICC)
- Boston Society for Architecture (BSA)



Dear Mr. Draisen,

With this letter, MOD X Advisory LLC (d/b/a MOD X) wishes to express support for the Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing (PRO Housing) grant application. This initiative aims to empower communities by actively addressing barriers to affordable housing, promoting increased housing production, and striving to reduce long-term housing costs for families in the region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Metropolitan Boston aligns perfectly with this spirit.

MOD X is a research advisory and knowledge management group dedicated to supporting industrialized, sustainable, and affordable housing initiatives by integrating academic, industry, non-profit, and government sectors in the prefabricated and volumetric modular offsite construction industry. MOD X is comprised of partners with an extensive global network of affiliate researchers and industry participants that are engaged based on expertise aligned to specific project requirements. MOD X has performed research for public and private organizations including the U.S. Department of Housing and Urban Development (HUD), USDA Forest Products Laboratory, U.S. Department of Homeland Security, U.S. Department of Veteran Affairs, the National Science Foundation, Lendlease, Google, Airbnb, Marriott, Fidelity Investments, Autodesk, and Saint-Gobain. The researchers have published several books and articles in journals since 2005 including seminal textbooks Prefab Architecture (Smith, 2011) and Offsite Architecture (Smith & Quale, 2017).

MOD X has established a demonstrable record of success in these areas exemplified by a series of successful projects for industry, non-governmental groups and the U.S. Department of Housing and Urban Development (HUD). In 2018, MOD X completed the “5 in 5 Growth Initiative: Research Roadmap Recommendations”, a two-year study for the leading trade association in the modular sector, the Modular Building Institute (MBI). Since that time, roadmap goals were exceeded with industry market share increasing from 2.5% to 6%. In 2021, the MOD X leadership team chaired a committee of experts with whom they developed the “Offsite Construction for Housing: Research Roadmap” for HUD (2022). MOD X is currently working on another project with HUD titled, “HUD’s Current and Future Role in U.S. Industrialized Construction”. MOD X founding partner Ivan Rupnik has been studying the Greater Boston context in relation to modular housing for over decade as a faculty member at Northeastern University. In 2010, Professor Rupnik organized one of the first symposia on this topic in the region, titled “Home Work: Contemporary Housing Delivery Systems”. In 2018, Rupnik and Professor Ryan E. Smith organized “MOD X: Modular Ecologies, Economies, Exchanges” specifically focused on fostering world-class offsite innovation across the U.S northeast.



MOD X recognizes that the development of a modular housing ecosystem in Greater Boston holds immense potential. MOD X has worked closely with other U.S. regions to develop similar ecosystems in the Minnesota, Washington, and Oregon while focusing organizational support for development of research-based strategy for maximizing the societal benefits from the adoption of a Modular Housing Ecosystem. These efforts would include collaborating with MAPC to address the lack of regional manufacturing facilities, outdated regulations that hinder offsite construction, logistics and transportation improvements, building professional knowledge sharing, and creating new jobs and workforce development particularly for BIPOC and W/MBE firms.

With our decades of combined experience and an extensive network of partners, MOD X will endeavor to ensure the greatest potential for success by helping MAPC avoid costly mistakes via facilitating the exchange of experiences and best practices with peer jurisdictions, identifying the particular scale and typology of residential development, understanding logistical and financial realities of modular construction, identifying stakeholders in the development, manufacturing, regulatory, financial sectors, and highlighting potential unforeseen regulatory barriers. By actively engaging in these activities, MOD X will contribute to the success and sustainability of the modular housing ecosystem thereby increasing housing affordability and availability for families across Metropolitan Boston.

In closing, we wish to express our wholehearted support for MAPC's PRO Housing grant application and the Modular Housing Ecosystem project. We have partnered with MAPC on other regional housing initiatives and remain confident that MAPC will be successful at convening stakeholders and carrying out grant activities. We firmly believe that by collaborating together, we can create a brighter future for our communities by expanding housing opportunities and addressing the challenges of affordable housing in Greater Boston.

Sincerely,
Ivan Rupnik, PhD
Founding Partner, MOD X Advisory LLC
Associate Professor, Northeastern University



23rd October, 2023

Dear Mr. Draisen,

I am writing to enthusiastically support the Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing grant application to HUD's PRO Housing grant program. This initiative aims to empower communities by actively addressing barriers to affordable housing, promoting increased housing production, and striving to reduce long-term housing costs for families in our region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Greater Boston aligns perfectly with this spirit.

The Massachusetts Institute of Technology in Cambridge, Massachusetts, has a distinguished record of achievement and global impact. Its students and faculty—among the finest in the world—ask big questions, test the limits of understanding, and open new frontiers of knowledge. Grounded in the MIT tradition of rigorous field-based research, the MIT Center for Real Estate (MIT/CRE), within the School of Architecture and Planning, has over thirty-nine years of experience in (1) pioneering research to investigate the real estate transaction from initial concept to market reality; (2) providing thought-leadership and deep understanding to empower organizations around the globe to capitalize on today's dynamic markets, transformative technologies and sustainability goals; and (3) training generations of professionals to engage the real estate sector through applied research, workshops, coursework, and events

The MIT/CRE recognizes that the development of a modular housing ecosystem in Greater Boston holds immense promise. We envision our organization's support taking various forms, including research, thought leadership, and providing industry expertise on modular housing construction methods. By actively engaging in these activities, we aim to contribute to the success and sustainability of the modular housing ecosystem, thereby increasing housing affordability and availability for families in our region.

In closing, we wish to express our wholehearted support for MAPC's Modular Housing Ecosystem project and application to HUD's PRO Housing grant program. We have partnered with MAPC on other regional housing initiatives, and we are confident that MAPC will be successful at convening stakeholders and carrying out grant activities. We firmly believe that together, we can create a brighter future for our communities by expanding housing opportunities and addressing the challenges of affordable housing in Greater Boston.

Sincerely,

Kairos Shen
Executive Director of the MIT Center for Real Estate
Organization: MIT Center for Real Estate

Contact Information: kaiross@mit.edu



Subject: Support letter for MAPC's proposal to advance housing in Greater Boston

Pilot Partner: Ryan M. Colker, Vice President, Innovation
International Code Council
rcolker@iccsafe.org

Submitted To: U.S. Housing and Urban Development (HUD)
Office of Policy Development & Research (PD&R)
Increasing the Supply of Affordable Housing through Off-Site Construction and Pro-Housing Reforms Research Grant Program Pre and Full Application FR-6700-N-92

Dear Mr. Draisen,

With this letter, the International Code Council (with the engagement of its subsidiary ICC NTA) expresses its support for the Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing (PRO Housing) grant application. This initiative aims to empower communities by actively addressing barriers to affordable housing, promoting increased housing production, and striving to reduce long-term housing costs for families in our region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Greater Boston aligns perfectly with this spirit.

The Code Council has developed a strong program to support the effective regulation of off-site construction and to help realize the benefits it can provide in addressing labor shortages within the building industry, the availability of affordable housing, and the achievement of sustainability goals. As you may know, the ICC develops the International Building Code (IBC) and the International Residential Code (IRC) which govern most of the construction (including off-site construction) in the U.S. (including in Massachusetts). We have developed standards to help streamline the design, fabrication, assembly, and regulation of off-site construction (ICC/MBI Standards 1200 and 1205). ICC NTA is a leading third-party service provider for both the modular (commercial and residential) and manufactured housing industries.

The Code Council recognizes that the development of a modular housing ecosystem in Greater Boston holds immense promise. We envision our organization's support taking various forms, including providing technical expertise on modular housing construction methods and regulatory approaches. By actively engaging in these activities, we aim to continue our contributions to the success and sustainability of the modular housing ecosystem, thereby increasing housing affordability and availability for families in the region. We also will look to results from this project to support our efforts nationally.

In closing, express our wholehearted support for MAPC's PRO Housing grant application and the Modular Housing Ecosystem project. We are confident that MAPC will be successful at convening stakeholders and carrying out grant activities. We firmly believe that together, we can create a brighter

future for our communities by expanding housing opportunities and addressing the challenges of affordable housing in Greater Boston and around the country.

Sincerely,

Ryan M. Colker, J.D., CAE
Vice President, Innovation
International Code Council



Marc Draisen
Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

RE: Support for MAPC's PRO Housing Grant Application

Dear Mr. Draisen,

With this letter, The Boston Society for Architecture (BSA) wishes to express its support for the Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing (PRO Housing) grant application. This initiative aims to empower communities by actively addressing barriers to affordable housing, promoting increased housing production, and striving to reduce long-term housing costs for families in our region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Greater Boston aligns perfectly with this spirit.

The BSA is a membership organization committed to improving the quality of life for Boston area residents by championing innovation in the built environment. We realize our mission by activating our network of architects, engineers, developers, policymakers, community members—and new partners—to work together to design and test solutions to today's most demanding problems. Our goal is to lift these solutions up as models that can be adopted locally, nationally, and internationally. The BSA is one of the oldest chapters of the American Institute of Architects (AIA) as well as a public-facing non-profit.

The BSA has a long history of collaboration with municipal partners in addressing housing issues. Most recently the BSA co-hosted a Housing Innovation Design Fellow with the City of Boston's Housing Innovation Lab (the iLab) focused on exploring design and policy solutions to unlock more affordable housing at a neighborhood scale. We have also worked with Boston on the early stages of their Accessory Dwelling Unit (ADU) pilot. Throughout this body of work, it has become clear that addressing the affordable housing challenges of our time will take many innovative ideas in design, building and financing.

The BSA recognizes that the development of a modular housing ecosystem in Greater Boston is one innovation that holds immense promise. We envision our organization's support taking various forms, which could include convening stakeholders, providing professional feedback and sharing the body of work with our vast audience in the design community. By actively engaging in these activities, we aim to contribute to the success and sustainability of the modular housing ecosystem, thereby increasing housing affordability and availability for families in our region.



Boston Society for Architecture
290 Congress Street, Suite 200
Boston, MA 02210-1024

P: 617-391-4000
F: 617-951-0845
architects.org

In closing, we wish to express our wholehearted support for MAPC's PRO Housing grant application and the Modular Housing Ecosystem project. We have partnered with MAPC on other regional housing initiatives, and we are confident that MAPC will be successful at convening stakeholders and carrying out grant activities. We firmly believe that together, we can create a brighter future for our communities by expanding housing opportunities and addressing the challenges of affordable housing in Greater Boston.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andrea Love', is written over a light gray horizontal line.

Name: Andrea Love FAIA
Title: President (2023)
Organization: BSA/AIA

Contact Information: alove@payette.com

Date: October 26, 2023

Letters of Support from State Entities

- Mass Housing Partnership (MHP)



October 13, 2023

Dear Mr. Draisen,

With this letter, Massachusetts Housing Partnership (MHP) wishes to express its support for the Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing (PRO Housing) grant application. This initiative aims to empower communities by actively addressing barriers to affordable housing, promoting increased housing production, and striving to reduce long-term housing costs for families in our region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Greater Boston aligns perfectly with this spirit.

160 Federal Street
Boston, Massachusetts 02110
Tel: 617-330-9955
Fax: 617-330-1919

MHP is a statewide quasi-public, nonprofit affordable housing organization that works in concert with the Governor and the state's Executive Office of Housing and Livable Communities (EOHLC) to help increase the supply of affordable housing in Massachusetts. MHP collaborates with communities across the Commonwealth to create innovative policy and financing solutions that provide affordable homes and better lives for the people of Massachusetts. We cannot do this work alone and rely on our local and regional partners to help move these initiatives forward. MHP has a rich history of researching and documenting the need for increased housing production through our [Center for Housing Data](#), and advocating for policy solutions at the state level to meet this need.


Our track record in these areas is exemplified by the success of our report [Unlocking the Commonwealth](#), released in 2014. It highlighted that a chronic lack of housing production threatened the state's economy by suppressing potential job growth and encouraging the out-migration of talent to other states with lower housing costs. The report included eight policy recommendations, many of which were introduced as legislation. Three of those MHP recommendations became law in some form: a multifamily zoning mandate, a new judicial mechanism to discourage frivolous land use appeals and authorization for cities and towns to negotiate cross-border development agreements without state legislative approval. These accomplishments demonstrate our commitment and ability to make a tangible impact on state housing policy.

Our most recent report, [Building Momentum: New Housing Policies to Unlock the Commonwealth's Potential](#), offers a new set of policy proposals, including one focused on modernizing construction practices to reduce the cost of new housing. Within this policy proposal, we highlight the impact of excessive construction costs on both the potential for private housing development to meet demand and our

ability to create efficiency in the Commonwealth's affordable housing delivery system. MHP recognizes that the development of a modular housing ecosystem in Greater Boston holds immense promise in achieving reductions in housing costs and reducing the gap between supply and demand for housing in Massachusetts. We envision MHP's support for this grant taking various forms, including conducting research to support the need for reduced construction costs and the effectiveness of this model, identifying and demonstrating best practices for financing of off-site construction, and advocating for policies that promote the adoption of modular housing. By actively participating in these activities, we aim to contribute to the success and sustainability of the modular housing ecosystem, thereby increasing the affordability and availability of housing for families in our region.

We wish to express our full support for MAPC's PRO Housing grant application and the Modular Housing Ecosystem project. We have partnered with MAPC on other regional housing initiatives such as regional housing need research and implementation of a recent multi-family zoning mandate for all communities served by the MBTA, and we are confident that MAPC will be successful at convening stakeholders and carrying out grant activities. We strongly believe that together, we can create a more vibrant future for our communities by expanding housing opportunities and addressing the challenges of affordable housing in Greater Boston and the Commonwealth.

Sincerely,



Clark Ziegler
Executive Director
Massachusetts Housing Partnership

Email: ziegler@mhp.net

Phone: 857-317-8585

10/13/2023

Letters of Support from Off-Site Construction Businesses and Experts

- Reframe Systems
- Ivory Innovations
- Haley & Aldrich, Inc.
- Tocci Construct, LLC

Subject: Letter of Support

Dear Mr. Draisen,

With this letter, Reframe Systems wishes to express its support for the Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing (PRO Housing) grant application. This initiative aims to empower communities by actively addressing barriers to affordable housing, promoting increased housing production, and striving to reduce long-term housing costs for families in our region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Greater Boston aligns perfectly with this spirit.

Reframe Systems is an industrialized construction startup that is developing advanced robotics and digital manufacturing to drive down the cost of net-zero carbon homes and drive large-scale adoption. We are currently setting up a prototype factory in Andover, MA and have several affordable housing projects underway in Arlington, MA and Somerville, MA. Our team is a multidisciplinary team of architects, roboticists, engineers and carpenters who are challenging the status quo of net-zero construction. We are backed by leading venture capital firms (Eclipse and Fundamental) in the industrial and construction sectors.

Reframe Systems recognizes that the development of a modular housing ecosystem in Greater Boston holds immense promise. We envision our organization's support taking various forms, including sharing best practices from our building platform and providing technical expertise on modular housing construction methods. By actively engaging in these activities, we aim to contribute to the success and sustainability of the modular housing ecosystem, thereby increasing housing affordability and availability for families in our region.

In closing, we wish to express our wholehearted support for MAPC's PRO Housing grant application and the Modular Housing Ecosystem project. We are confident that MAPC will be successful at convening stakeholders and carrying out grant activities. We firmly believe that together, we can create a brighter future for our communities by expanding housing opportunities and addressing the challenges of affordable housing in Greater Boston.



Sincerely,

Vikas Enti

Vikas Enti
Co-Founder and CEO
Reframe Systems

617-952-2100
vikas@reframe.systems
October 25, 2023



October 24, 2023

Dear Mr. Draisen,

With this letter, Ivory Innovations wishes to express its support for the **Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing (PRO Housing)** grant application. This initiative aims to empower communities by actively addressing barriers to affordable housing, promoting increased housing production, and striving to reduce long-term housing costs for families in our region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Greater Boston aligns perfectly with this spirit.

Our mission as a nonprofit is to catalyze innovation in housing affordability. Over the last 5 years, we have spoken with hundreds of entrepreneurs, policy makers, capital providers, and industry experts to identify novel, scalable solutions to the housing challenges we face. Of these hundreds, we have recognized 122 organizations or government entities as leaders in their fields. The City of Boston is one of those entities that has garnered our support and recognition for their innovative programs and approach to the issue of housing affordability.

Promoting increased adoption of offsite construction in the housing industry is a core component of Ivory Innovations' mission to catalyze innovation in housing affordability. Through the Ivory Prize, a nationally focused award which recognizes innovators for advancing solutions in housing affordability, we have evaluated, supported, and remain in close contact with dozens of builders, developers, and other organizations in the offsite construction sphere. To facilitate industry adoption of these technologies, we have sought to raise awareness and understanding through the development of various educational resources. Most recently, we created an educational resource in partnership with the National Association of Home Builders, MOD X, Harvard Joint Center for Housing Studies, Turner Housing Lab, National Association of Counties, and others to discuss the importance of offsite construction methods in furthering housing affordability. In October 2023, we hosted a nationally-attended Summit on offsite construction in Salt Lake City, discussing policy, financial, and construction levers to increase industry adoption of offsite techniques.

Ivory Innovations recognizes that the development of a modular housing ecosystem in Greater Boston holds immense promise. We cannot build the way we have always built and hope to get different results. Developing such an ecosystem has the great potential to increase housing availability and affordability, goals of which we are more than supportive. Our support is wholehearted and we are excited to help with industry connections and our recommendations for best practices based on our review of other regional efforts to develop similar ecosystems.



We enthusiastically support MAPC's PRO Housing grant application and the Modular Housing Ecosystem project. We are confident that MAPC will be successful at convening stakeholders and carrying out grant activities and are excited to support them as they do so. This proposal creates a brighter future for Boston-area communities by expanding housing opportunities and addressing the challenges of affordable housing and could be a beacon to many others across the country exploring the same issues.

Sincerely,

A handwritten signature in black ink that reads "Jenna Louie". The signature is written in a cursive, flowing style.

Jenna Louie
Chief Innovation and Strategy Officer
Ivory Innovations
jenna@ivoryinnovations.org



HALEY & ALDRICH, INC.
465 Medford St.
Suite 2200
Boston, MA 02129
617.886.7400

30 October 2023

Metropolitan Area Planning Council
60 Temple Place
Boston, MA 02111

Attention: Marc Draisen, Executive Director

Subject: Letter of Support for PRO Housing

Dear Mr. Draisen:

With this letter, Haley & Aldrich, Inc. wishes to express its support for the Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing (PRO Housing) grant application. This initiative aims to empower communities by actively addressing barriers to affordable housing, promoting increased housing production, and striving to reduce long-term housing costs for families in our region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Greater Boston aligns perfectly with this spirit.

Haley & Aldrich, Inc. is a national engineering and environmental consulting firm that started and is headquartered in Boston, serving clients in multiple markets including institutions, government, and real estate developers. Our vision is to be *the company most sought after to integrate technology and human potential to tackle tough issues facing the world*. This vision is realized by our overarching goals of technology advancement within the built environment, as well as a focus on diversifying our staff and the overall Architecture/Engineering/Construction (AEC) pipeline, to better reflect the communities in which we live, work, and serve. Incorporating Diversity, Equity, and Inclusion (DEI) into our operations has been a multi-year effort, as a major aspect of our overall Environmental, Social, and Governance (ESG) principles.

Haley & Aldrich is and has been a part of numerous housing developments over the 65+ years we've served in Greater Boston and surrounding cities and towns. We are dedicated to our continued housing advocacy in the City of Boston and other neighboring communities. Our involvement includes: working on and/or facilitating both affordable housing projects and Industrialized (modular) Construction best practices, as well as annual sponsorship of various community organizations that help homeless or low-income candidates (e.g. Heading Home [2022 Community Builder of the Year Award Recipient], United Way, Caritas Communities, East Boston Social Centers, Cambridge and Somerville Programs for Addiction Recovery, etc.).

We are committed to workforce development, specific to the AEC industry. We are actively involved in shaping DEI hiring practices locally with our participation in and facilitation of various industry organization events (e.g. AGCMA DEI events hosted by Wellesley College and Northeastern University, CRE DEI Collaborative events hosted by NAIOP and ULI). We have also created tailored programming for several local-area schools, including Boston Public Schools, Bunker Hill Community College, and UMass

Boston. These programs include bringing with us partnering designer firms and trades to expose students at an earlier age potential career opportunities in AEC-related fields, in efforts to broaden reach to underrepresented groups and increase diversity in the overall pipeline for our industry. Haley & Aldrich also created a unique STEM Internship program to provide high school, first- and second-year students at these schools the work experience needed to start their career.

Haley & Aldrich recognizes that the development of a modular housing ecosystem in Greater Boston holds immense promise. We envision our organization's support taking various forms, including helping with siting of a manufacturing facility (including geotechnical, civil, and environmental support) and helping with workforce development. By actively engaging in these activities, we aim to contribute to the success and sustainability of the modular housing ecosystem, thereby increasing housing affordability and availability for families in our region.

In closing, we wish to express our wholehearted support for MAPC's PRO Housing grant application and the Modular Housing Ecosystem project. With the City of Boston and other local municipalities we serve being partners in the MAPC, we are confident that MAPC will be successful at convening stakeholders and carrying out grant activities. We firmly believe that together, we can create a brighter future for our communities by expanding housing opportunities and addressing the challenges of affordable housing in Greater Boston.

Sincerely yours,
HALEY & ALDRICH, INC.



Kelvin Wong, P.E.
Senior Associate



Mark Balfe, P.E.
Principal



October 23, 2023

Reference: Grant Application for Modular City of Boston

Dear Mr. Draisen

We at Tocci Construct are pleased to express our support for the Metropolitan Area Planning Council's (MAPC) Pathways to Removing Obstacles to Housing (PRO Housing) grant application. As you know this initiative aims to empower communities by effectively addressing barriers to affordable housing, generating increased housing production, and actually reducing long-term housing costs for families in our region. MAPC's visionary proposal for the development of a Modular Housing Ecosystem in Greater Boston aligns perfectly with this mission.

Tocci Construct, LLC is a 101 year old family owned construction management company. We have a tract record of successfully building multifamily housing throughout the NE US for more than 75 years. Tocci has delivered over 10,000 units, including more than 1500 affordable homes and apartments. We have built more modular projects in Greater Boston than any other builder, with our first dating back to 1997, including a major modular family housing development for the US Army at the Natick Labs in cooperation with the US Army Corps of Engineers. We are currently building and developing conventional housing projects between 100 and 300 units (each) which employ several state-of-the-art design and construction processes.

In addition, we are actively involved in private R&D initiatives with major Boston design partners, focused on optimization and elimination of waste in multifamily and mixed-use residential projects. We are also involved in supportive housing and transitional family housing projects together with local hospitals and non-profits. In short, we know housing—what works and what doesn't.

As to this initiative, we were pleased to assist the Boston Innovation Lab and MIT CRE's Transformation Lab quest for root causes to persistently high housing prices. With respect to modular housing, we identified the leading obstacle to affordable production is transportation. Unless and until a modular factory is located within 25 miles of Boston, the region will continue to miss the major benefits of affordable modular housing. As a result, we are extremely pleased to see and support this grant application. In our opinion this initiative has the highest probability of increasing the competitive advantage of modular fabrication and successfully reducing the cost of all housing throughout the region.

In addition to our construction expertise TOCCI has deep manufacturing knowledge and enjoys strategic relationships with leading modular systems companies and manufacturers throughout the US and Canada. If successful, we will be pleased to continue to support MAPC and the City of Boston's efforts by active assistance, leveraging the advice and counsel of other modular experts and, ultimately, putting our money where our mouth is by purchasing locally produced modular product.

October 23, 2023

In closing, we wish to express our wholehearted support for MAPC's PRO Housing grant application and the Modular Housing Ecosystem project. We have participated with MAPC on other regional housing and development initiatives and are confident that MAPC will be successful at convening stakeholders and carrying out grant activities. There has been much talk and idealistic exploration toward the laudable goal of equitable, affordable housing. However, in our professional opinion and my personal experience of almost 5 decades of building housing, nothing holds more potential for delivering real results than this initiative. Obviously, we strongly endorse this application and look forward to its award and the fruit of fair housing it will undoubtedly advance.

Very truly yours,

A handwritten signature in black ink, appearing to read "John L. Tocci, Sr.", with a large, stylized flourish on the left side.

Tocci Construct, LLC
John L. Tocci, Sr.
Chief Executive Officer
jtocci@tocci.



Expanding Offsite Construction Technologies

Housing & Urban Development (HUD) Grant Application

Pathways to Removing Obstacles to Housing (PRO Housing) Grant Program

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Executive Summary

The Metropolitan Area Planning Council (MAPC), Greater Boston's regional planning agency is partnering with the City of Boston, with other municipalities anticipated to join if the grant is awarded, and others in the housing field to advance the following proposal to HUD to address the severe shortage of both market-rate and affordable housing that exists in our region. We are committed to doing so through a mechanism that will create quality jobs in the housing construction field, with livable wages, benefits, and worker protections. The Commonwealth of Massachusetts, MAPC, and the participating local governments are all actively working to address our region's housing needs, but the problem is too large to solve with one silver-bullet strategy or by one individual entity. Greater Boston desperately needs to pick up the pace of housing production, especially housing that is affordable to low and moderate-income households. New housing also needs to be resilient, energy-efficient, and located in areas with good transit access so residents can easily get to jobs, services, schools, and amenities.

This grant proposal addresses Greater Boston's housing needs by seeking to reduce several significant barriers to the production of new housing units in our region, the foremost of which is high construction costs. Offsite housing construction is a well-proven way to reduce construction costs and timelines while maintaining the highest quality standards and often increasing energy efficiency due to the controlled environment of a manufacturing facility. Increasing offsite construction can also reduce two other key barriers to housing production: the time it takes to construct new housing and local opposition to new construction projects. With our partners, we have carefully constructed a regional approach to research and incentivize innovative offsite construction methods on strategically located sites to reduce these barriers to the production of housing that is naturally affordable or includes deed-restricted affordability. We recognize that traditional on-site wood and steel frame construction is a vital part of our construction industry and produces quality homes, particularly high-density, high-rise housing developments. We see an opportunity to complement these on-site construction projects, underway and planned throughout the region, by supporting the use of offsite construction methods with a focus on deed-restricted affordable projects of various sizes and scales and smaller, infill housing developments whose small scale often makes feasibility a challenge, including single-family, duplexes, townhomes, and small multi-family structures. By diversifying our construction methods and exploring offsite methods regionwide, we are confident that we can more quickly meet our housing and climate goals, while also creating a greater diversity of good jobs with good wages and benefits in the construction field.

Research that informed this proposal, which included extensive engagement with subject matter experts and stakeholders, highlighted that one of the greatest barriers to the widespread use of offsite construction in Greater Boston is the lack of a manufacturing facility within 50 miles of Boston. Without a local facility, those who are developing with modular units are often not reaping the associated cost benefits because of the added transportation and logistical costs.

To attract a large manufacturing facility to the region, there must be sufficient demand. Based on our research, the optimal pipeline needed to support a large manufacturing facility is approximately a minimum of 1,000 housing units per year for at least three years. The acute demand for new housing units, especially affordable housing units, in our region is great enough to achieve this required demand, but it cannot be achieved by one municipality alone, hence the

need for a regional approach. If awarded these funds, our goal is to support construction of a new manufacturing facility and produce the first units of affordable modular housing by the close of 2030.

As this proposal was developed, the project team engaged labor representatives and heard hesitancy around expanding offsite construction, as it is viewed as having potential to supplant on-site construction-related jobs. An important aspect of this proposal addresses the concerns voiced by labor representatives. Part of the grant activities are aimed at exploring and securing workforce requirements expected of any offsite construction methods. MAPC and its municipalities are committed to working with statewide and local labor organizations and their members to continuing conversations to understand the nuances of the construction industry and to ensure that offsite construction will create new jobs with good benefits for more residents of Greater Boston. Through the project's Working Group and sub-groups, MAPC will work with labor representatives to understand how offsite construction jobs can complement on-site construction jobs to improve the overall construction industry and result in quicker, but still high-quality and durable, housing development. Research activities will explore how labor agreements and other components of any solicitation¹ for a new facility can ensure the jobs created meet local labor standards and offer new opportunities for women and minority workers. We are excited to continue learning from offsite construction facilities elsewhere in the country, where workers have been unionized or labor agreements have been leveraged to create a highly skilled workforce with good wages, benefits, and protections. We envision this project setting a new precedent for how offsite construction can provide quality jobs and continue to work hand-in-hand with onsite construction methods. To fully address the region, and nation's, housing shortage, we need to embrace and continue to improve all construction technologies. We are confident we can contribute to this effort, while also staying true to Greater Boston's commitment of creating high quality jobs for our residents.

Anticipated Project Partners

The proposal has been developed with the primary municipal grant partner, the City of Boston, playing a central role. In crafting this proposal, MAPC has engaged with a range of cities and towns in the region that share a commitment to advancing housing goals. These communities are active members of the Metro Mayors Coalition Housing Task Force, and they include Arlington, Cambridge, Chelsea, Everett, Newton, Somerville, and Watertown.

At the time of application submission, these municipalities have expressed their interest in participating in the project, with the cities of Boston, Everett and Newton providing letters of support ahead of the grant deadline. While specific details of other communities' involvement were not finalized within the application period, MAPC is in close collaboration with these communities. We are eagerly anticipating further municipal outreach efforts to secure a diverse group of participating cities and towns. This collaborative approach aims to collectively advance offsite construction initiatives, making it more regionally inclusive and comprehensive.

¹ A solicitation could take the shape of a Notice of Funding Opportunity (NOFO) or Request for Proposals (RFP), two legal documents that often are employed by public agencies to enter into public/private partnerships or agreements.

Threshold Requirements and Other Submission Requirements

MAPC is eligible to apply for this grant as a multijurisdictional entity. MAPC is a regional planning agency created under Massachusetts General Law Chapter 40B Section 24. MAPC has 101 member cities and towns and is governed by representatives from each city and town in the region, as well as gubernatorial appointees and designees of major public agencies.

Threshold Eligibility Requirements, pursuant to Section III.D

1. MAPC does not have any outstanding civil rights matters.
2. MAPC is submitting this grant proposal by the deadline via Grants.gov.
3. MAPC, as a multijurisdictional entity, is an eligible applicant under Section III.A.
4. MAPC is only submitting one application under this grant funding opportunity.

Taking Action to Address Housing Need

Massachusetts, MAPC, and the region's 101 cities and towns have strong track records of pioneering the adoption of progressive housing policies and budgetary actions to support the creation and preservation of affordable housing. At all levels of government, a multitude of housing tools and strategies have been employed successfully. As a result, Massachusetts has a significantly larger share of subsidized or affordable housing than other states and continues to increase this segment of the housing stock more rapidly than other states and regions. MAPC works with cities and towns to locate affordable housing in high opportunity areas to advance racial and social equity. A sampling of select state, regional, and local housing actions are described below.

State Housing Actions

State Adoption of Chapter 40B

In 1969, Massachusetts adopted [Chapter 40B](#), providing relief from exclusionary zoning practices that prevented the construction of low- and moderate-income housing, particularly in suburban municipalities. The statute provides developers with an expedited approval process for projects that contain housing units affordable to households earning below 80% of AMI, as well as a State appeals process that may be used if a local zoning board denies the application. Chapter 40B has been revised and updated numerous times since its passage to increase its efficacy. Since its inception, Chapter 40B has had a significant impact on the production of affordable and market rate housing. As of 2023, two-thirds of all Massachusetts cities and towns (234 of 351) had over five percent of their housing stock affordable, including many in affluent suburbs with highly rated public schools. Nearly a quarter of cities and towns (81 of 351) have over 10 percent of their housing stock affordable. Only 45 jurisdictions have no affordable units, but these are mostly smaller, rural towns with overall lower housing costs.

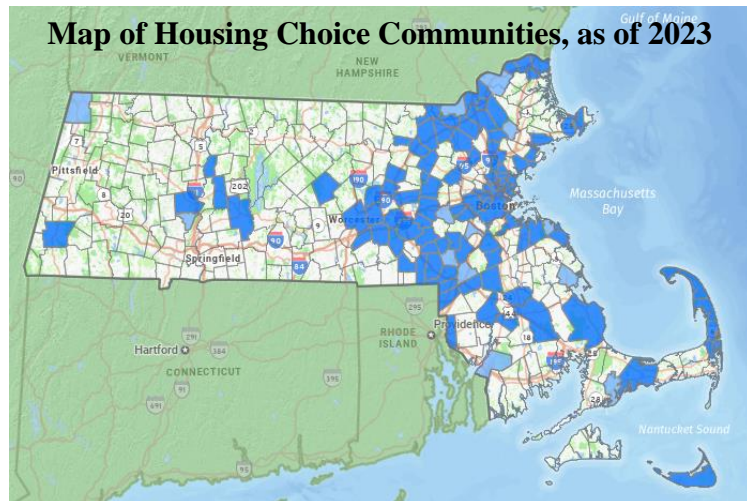
Community Preservation Act

In 2000, Massachusetts passed the [Community Preservation Act](#) that allows cities and towns to conduct a referendum to add a small surcharge on local property taxes. The local surcharge is matched by a statewide Community Preservation Trust Fund. The funds gathered can be used to support local affordable housing development, among other things (like parks and recreation, open space protection, and historic preservation). At least 10% of funds must go to affordable housing annually, but many communities allocate more than this. Since the passage of the Community Preservation Act, 195 communities have adopted the local surcharge, which has contributed to the creation of over 10,000 new affordable homes statewide. This is an excellent dedicated source of revenue that cities and towns can leverage to produce new and preserve existing affordable housing.

Housing Choice Initiative and Legislation

In 2019, Massachusetts established the [Housing Choice Initiative](#) designation program, which rewards cities and towns for producing new housing and adopting best practices to promote sustainable housing development. Housing choice designation provides exclusive access to Housing Choice capital grants to fund capital projects, often needed to support infrastructure needs related to growth. Housing Choice communities also receive bonus points or other considerations for a number of other Commonwealth funding programs. Municipalities are eligible for designation if they have had greater than 5% housing growth or over 500 new units built over the last five years, or if they have had 3% housing growth or over 300 new units built in the last five years plus have adopted five out of the 11 housing best practices. Currently, 95 cities and towns in Massachusetts have achieved this designation, exhibiting the state's commitment across varying communities to addressing housing need.

In 2021, through an Economic Development Bond Bill (H. 5250), Massachusetts amended the state's zoning act to institute three major changes: 1) eliminate the 2/3 majority vote for certain zoning changes related to housing production; 2) multi-family zoning requirement for MBTA municipalities (detailed further in the next section); and 3) changes to streamline permitting and discourage meritless legal challenges. The change from supermajority to simple majority voting is critical to lower the barrier of local opposition to affordable housing.



Amendment to State Zoning Act to add Section 3A, Multi-Family Zoning Mandate

[Multi-family zoning requirements](#) were enacted in 2021 as part of the aforementioned Housing Choice legislation, and this new section of state law mandates that all 177 communities within the MBTA transit service area (see the below map) must have at least one zoning district near transit or other smart growth location where multi-family (defined as a building with three or

more units) is allowed by-right. This new state law is intended promote higher-density housing development in transit-accessible locations.² The state has provided more than \$2 million in technical assistance to more than 50 communities that are working to comply with these new requirements.³ Compliant zoning must be in place by December 2023 for communities served by fixed-rail/subway, December 2024 for communities served by regional/commuter rail, and December 2025 for the remaining communities. All but one community within the MAPC region must comply with Section 3A, collectively removing zoning barriers to housing production at a regional scale. MAPC is providing technical assistance to many of these communities, by helping review existing zoning and identifying alternatives for zoning amendments. Section 3A is a critical tool to unlocking the development potential near transit, where exclusionary or restrictive zoning has outlawed multi-family housing.

Regional and Local Housing Actions

MAPC supports housing production, preservation, and stability through state-level legislative advocacy and local technical assistance to advancing housing strategies. MAPC provides over \$1.25M in technical assistance grants each year to cities and towns located within Greater Boston. Often, up to \$400,000 or more of these grants go to land use and housing planning projects, where MAPC planning staff work with cities and towns on a variety of projects, such as housing production plans, mixed-use/smart growth zoning, inclusionary zoning ordinances, fair housing plans, land disposition for affordable housing, housing needs assessments, and more. MAPC has helped cities and towns establish Affordable Housing Trusts, Housing Partnership Committees, and other groups to advance implementation of housing plans and strategies. MAPC's technical assistance program is crucial to ensuring cities and towns have the capacity to tackle challenging housing issues and projects.

MAPC also provides support to municipalities and state partners through housing-related research products. Notably, MAPC's [Zoning Atlas](#) highlighted the need for massive zoning reform to remove regulatory barriers to housing development. The [Housing Submarket Analysis](#) gave local planners and policymakers greater insights into local housing conditions and offered a suite of policy interventions to combat rising housing prices and displacement risk. A 2017 study on the [impacts of housing production on school enrollment](#) dispelled myths that new homes automatically lead to more students in local districts. In 2021, MAPC's [Rethinking the Retail Strip](#) research highlighted specific parcels that would be suitable for redeveloping with more dense housing options and a mixture of uses with improved connectivity, to transition the region from auto-dependent separated land use patterns to more walkable, "complete neighborhoods". The report found that if just 10% of the identified parcels were redeveloped, as many as 124,000 new homes could be created.

Beyond the work done in partnership with MAPC through the technical assistance program, cities and towns in Greater Boston continue to take steps to produce more affordable housing.

Inclusionary Zoning

² <https://www.mass.gov/info-details/multi-family-zoning-requirement-for-mbta-communities>

³ <https://www.masslive.com/politics/2023/08/mass-adds-new-penalties-for-towns-not-following-mbta-communities-zoning-law.html#:~:text=The%20law%20was%20adopted%20in,or%20ferry%20terminal%2C%20if%20applicable.>

Inclusionary zoning links development of market-rate housing with production of affordable units through the use of development incentives. Inclusionary zoning, which can apply city/town-wide or be limited to select geographic areas, requires a minimum percentage of low- and moderate-income housing in new residential development. MAPC has helped many cities and towns adopt or update inclusionary zoning to produce more affordable homes. Over 60 communities in Greater Boston have some form of inclusionary zoning.

Municipal Affordable Housing Trust Fund

In 2005, the Massachusetts State Legislature passed the Municipal Affordable Housing Trust Fund Law, simplifying the process for cities to establish a local housing trust fund and enabling all communities to create a housing trust through their local legislative body. Since passage of the law, approximately 98 communities have established municipal affordable housing trust funds.⁴

City of Boston Housing Actions

According to the 2022 Income Restricted Housing Report prepared by the City of Boston Mayor's Office of Housing, Boston has the highest percentage of income-restricted housing of any major city in the country, with 19.2 percent of its total housing stock designated as income-restricted. In the past 10 years, Boston has permitted 8,975 income-restricted housing units, which is 21.4 percent of all permits during that time. In 2022 alone, 30 percent of all units permitted were income-restricted (1,299 units). A number of different strategies, outlined in more detail below, have contributed to consistently developing affordable housing.

Overhauling Boston's Antiquated Zoning Code to Remove Regulatory Barriers: In September 2023, the City of Boston released a [report](#) that initiated Zoning Reform and Zoning Compliance teams to support the City's ability to modernize and enforce the Code, which has not been comprehensively updated since 1964.

Inclusionary Housing Ordinance: The Inclusionary Housing Policy requires developers of large residential or commercial projects to contribute to Boston's affordable housing either by creating affordable units or making a financial contribution.⁵ Since its inception, the program has generated approximately 7,000 affordable housing units, according to data compiled by the Mayor's Office of Housing. In October 2022, \$1M in Inclusionary Development funds were used to create the state's first Mixed Income Neighborhood Trust and establish 114 affordable housing units.⁶

Eliminated Parking Minimums for Affordable Housing Developments: In December 2021, the Boston Zoning Code was amended to remove the requirement for a minimum number of parking spaces in new affordable housing developments.⁷ The policy aims to reduce construction costs

⁴ https://www.mhp.net/assets/resources/documents/MAHTGuidebook_2018.pdf

⁵ <https://www.bostonplans.org/projects/standards/inclusionary-development-policy>

⁶ <https://www.boston.gov/news/acquisition-and-expansion-affordable-housing-east-boston-announced>

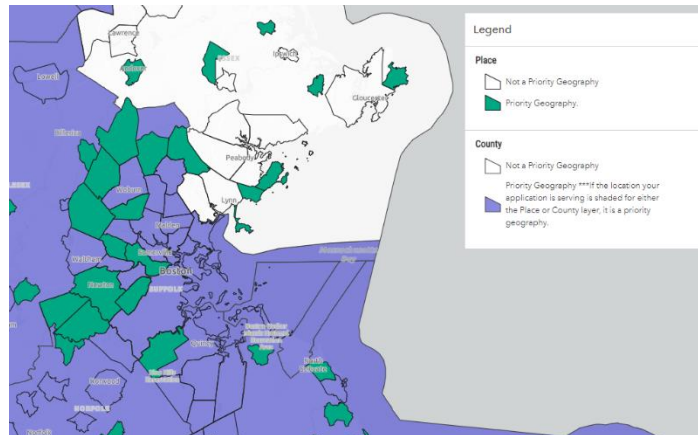
⁷ <https://www.bostonplans.org/news-calendar/news-updates/2021/12/22/mayor-wu-eliminates-parking-minimums-for-affordabl>

and promote the development of more affordable housing units. Removal of parking units is a key enabler of inclusionary zoning policy effectiveness.⁸

Acquisition Opportunity Program: In 2016, Boston earmarked \$7.5M for the Acquisition Opportunity Program, which provides funding to developers to purchase and preserve the affordability of multifamily housing properties in Boston and prevent displacement.⁹ Acquired properties must restrict 40% of proposed units to tenants earning up to 60% of the Area Median Income.¹⁰ To date, the Acquisition Opportunity Program has supported the acquisition of 632 units.¹¹

Acute Need

The supply of affordable housing is failing to keep pace with the growing need of our region. The data clearly highlights the critical issue of inadequate affordable housing supply across our anticipated partner municipalities, which underscores the pressing need for action. The MAPC region is home to a number of HUD-designated priority geographies, as indicated in the following map. Housing need is further illustrated below.



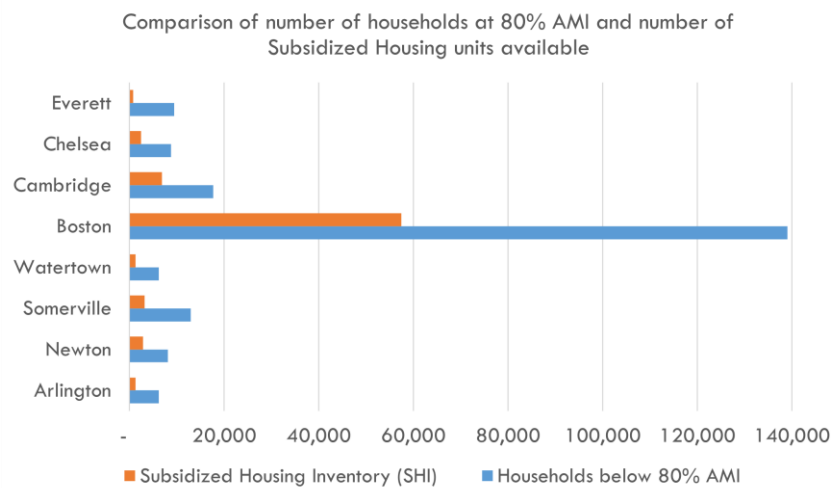
Ratio of Household at or below 80% AMI to Affordable Housing Units available: The chart below provides a comparison between the count of households at or below 80% AMI and the Subsidized Housing Inventory (SHI) within our partner municipalities. To put this into perspective, in Everett, there are nearly 12 families at 80% AMI competing for each available affordable housing unit, while in Watertown, the ratio stands at 5 families for every unit. Source: HUD, EOHLC.

⁸ <https://www.hks.harvard.edu/publications/can-inclusionary-zoning-be-effective-housing-policy-greater-boston-evidence-lynn-and>

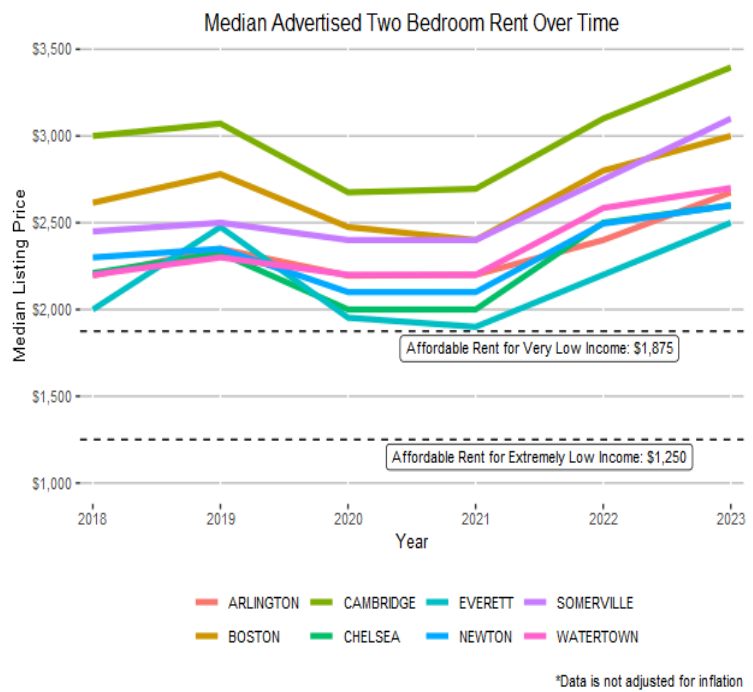
⁹ <https://www.boston.gov/housing/acquisition-opportunity-program>

¹⁰ <https://www.boston.gov/sites/default/files/file/2023/01/Docket%20%230157.pdf>

¹¹ https://home.treasury.gov/system/files/136/Boston_2022RecoveryPlan_SLT-0542.pdf

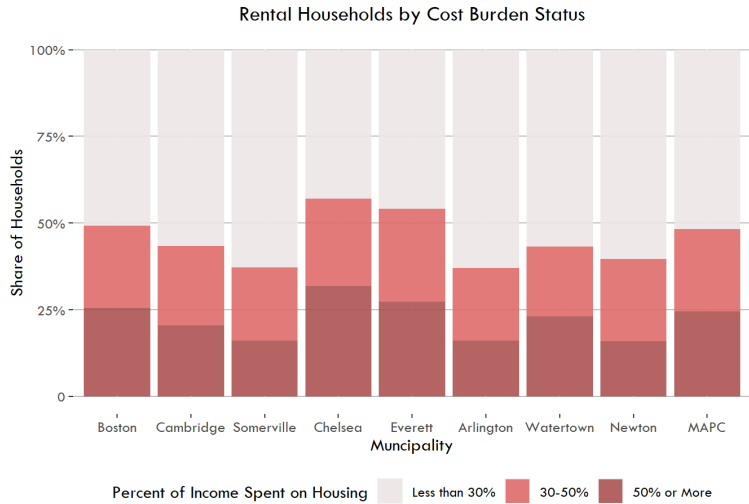


Rental Affordability: The chart below illustrates the median advertised rent for two-bedroom properties from 2018 to 2023. It's important to highlight that these median listing prices consistently exceed what can be considered affordable for both very low-income (\$1,875) and extremely low-income (\$1,250) households across all communities. This concerning trend has persisted throughout the entire period, with rental prices reaching as high as \$3,300 in Cambridge, and even the lowest rates, such as those in Watertown, remaining significantly high at up to \$2,500. Source: MAPC Rental Housing Listing Database.

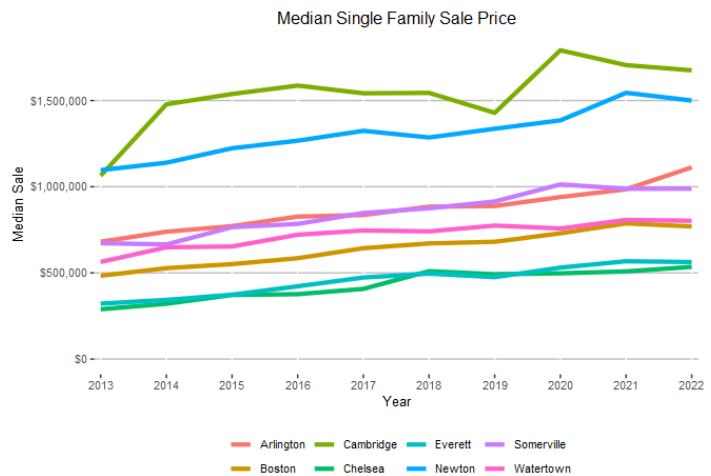


Rent Burden: The severity of the housing crisis is further underscored when we examine the data on rent burden. The chart below illustrates the percentage of income that rental households in each of the participating municipalities, as well as the broader MAPC region, spend on housing. Nearly a quarter, or approximately 25%, of rental households face an extreme rent burden, allocating more than half of their income toward rent. This translates to an approximate total of 134,000 households grappling with this overwhelming financial strain.

Source: ACS 2017-2021



Sale Prices: The urgency for housing becomes even more pronounced when examining the data on sale prices. The chart below illustrates a consistent upward trend in the median sale prices of single-family homes across all the participating municipalities from 2013 to 2022. Communities like Everett and Chelsea have witnessed a doubling of their median house prices over the course of the decade. Watertown has seen the smallest increase, which is still significant, an increase of more than a third. Source: MAPC, Real Estate Database from the Warren Group.



Key Barriers to Affordable Housing

In addition to availability of funding for affordable housing and outdated regulatory barriers (such as antiquated zoning codes and lengthy development approvals processes), producing affordable housing in the Greater Boston area is hindered by high construction and development costs. Related to this, construction timelines and local opposition to the production of new housing units impede housing growth. Offsite construction provides the biggest opportunity to lower barriers related to high construction and development costs, while also offering relief to construction timelines and local opposition.

According to data compiled by the City of Boston Mayor’s Office of Housing, over the past five years, the median time between permit application with the City’s Inspectional Services Department, through project completion, for all new residential construction projects, is just shy

of 3 years (1,089 days). Statewide, analysis from RS Means, a national construction data tracking service, highlighted that multifamily housing construction costs are 20 percent higher than the national average, dampening the potential for private housing developers to produce both market-rate and affordable units.¹² Climbing construction costs mean that more public dollars must be contributed to produce affordable housing. Interviews with dozens of local and regional developers indicate that overall development costs can easily be more than \$500,000 per unit in the urban core of Metro Boston and more than \$400,000 elsewhere in the region.

Local opposition to the construction of new housing remains a barrier to increasing housing supply. In 2018, Boston University researchers Katherine Levine Einstein, Maxwell Palmer, and David Glick published an article titled, “*Who participates in local government? Evidence from meeting minutes,*” sharing findings following the compilation and analysis of a novel data set that coded thousands of instances of citizens speaking at planning and zoning board meetings in Massachusetts concerning housing development. They found that individuals who are older, male, longtime residents, voters in local elections, and homeowners are significantly more likely to participate in these meetings and overwhelmingly (and to a much greater degree than the general public) oppose new housing construction. The researchers ultimately conclude that these participatory inequalities have important policy implications and may be contributing to rising housing costs. Modular construction addresses local concerns related to onsite disruptions by spending much less time building homes onsite, compared to traditional construction methods that can impact neighborhoods for months or years.

Vision

Collectively, the Greater Boston region imagines a future where all residents have safe and comfortable homes that they can afford in the communities that they prefer.¹³ This grant proposal, through creation of more and diverse homes built by workers with good benefits throughout Greater Boston, advances the regional vision and regional housing initiatives, including the [Metropolitan Mayors Coalition](#) (MMC) – a group facilitated by MAPC and comprising the chief executives of 15 cities and towns in the urban core of Metro Boston, where more than 1.4 million people reside – and their [Housing Task Force](#), established in 2017 to address collectively their serious housing needs. The MMC Housing Task Force set a landmark housing production goal: 185,000 new units between 2015 and 2030 in their 15 communities. To achieve this goal, the region needs to continue to remove barriers to conventional housing production, while also researching and promoting alternative and innovative construction technologies that can complement but not replace our thriving construction industry.

This grant proposal advances our vision by seeking to address three barriers to the production of new affordable housing units in the Greater Boston region: 1) high construction costs; 2) time to construct new housing; and 3) local opposition to new construction projects. By developing a regional strategy to research and incentivize the use of innovative offsite construction methods (as opposed to traditional, wood and steel frame construction), we will reduce these barriers to affordable housing production. Offsite manufacturing methods are often organized into three

¹² [Building Momentum: New Housing Policies to Unlock the Commonwealth's Potential](#), Massachusetts Housing Partnership, August 2023.

¹³ Housing Vision, [MetroCommon2050](#) Regional Plan, Metropolitan Area Planning Council, 2021.

categories or degrees of enhancement (or prefabrication) or level of completion/finish: (1) kit-of-parts (1D systems), panelized (2D), and modular (3D) systems.¹⁴ All of these systems have been used to build housing in the Greater Boston area, though steel and wood-frame onsite construction remains the predominant method of construction.

With a regional approach, we will effectively tackle one of the largest barriers to the widespread use of offsite construction in the Greater Boston area: the lack of a manufacturing facility in close proximity to cities and towns in which most of the State’s new housing is being built. Through extensive engagement with subject matter experts and stakeholders, it has become apparent that the lack of a manufacturing facility within 50 miles of Boston is the most significant barrier to modular construction due to both the transportation and logistical challenges of transporting modules across state and country boundaries, and the pressure to employ local residents throughout all phases of construction projects. To attract a large manufacturing facility, there must be sufficient demand. Based on our research, the optimal pipeline needed to support a large manufacturing facility is approximately and at a minimum 1,000 housing units per year for at least three years. The acute demand for new housing units, and especially affordable housing units, in the Greater Boston area is great enough to achieve this required demand, but individual resources are not sufficient for one municipality to demonstrate such a pipeline, hence the need for a regional approach. If awarded these funds, our goal is to support construction of a new manufacturing facility and produce the first 500 units of affordable modular housing by the close of 2030.

Approach

The siting of a manufacturing facility or facilities to advance housing production in the Boston metropolitan area will benefit low- and moderate-income persons, helping to achieve a national objective of the CDBG program, pursuant to section 101(c) of the Housing and Community Development Act of 1974, by increasing the region’s capacity to efficiently construct housing units affordable to these households. While offsite construction methods are certainly not limited to affordable projects and have been more widely used to produce market-rate units in the region, the primary objective of this initiative will be to accelerate the production of housing units affordable to low- and moderate-income households by incentivizing the use of offsite construction methods. In our research, we found that the key to efficient, cost-effective production of affordable housing is replicability. We are proposing to work with a manufacturer or manufacturers to design basic modules that can be situated in a variety of contexts, including accessory dwelling units (ADUs), duplexes, small multi-family buildings (e.g., triple deckers or triplexes, townhomes, etc.) and other infill, “missing middle” housing typologies that allow for the addition of “gentle density” in neighborhoods across Greater Boston.

Our proposed plan includes completion of the following eligible activities as outlined in the grant NOFO:

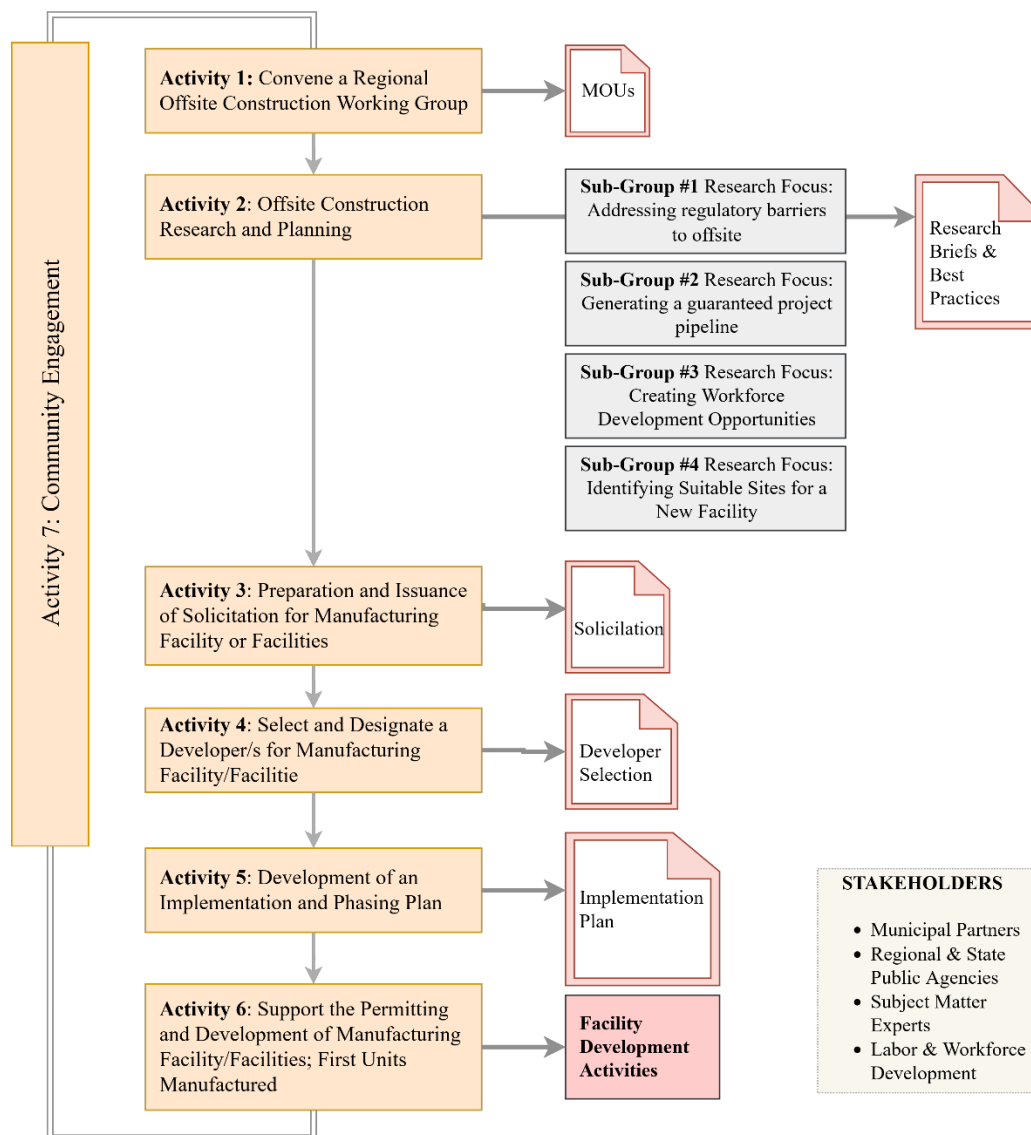
- Planning and policy activities supporting affordable housing, including 1) developing new incentive programs for affordable housing development; 2) developing proposals to

¹⁴ https://drive.google.com/file/d/1AnG_FMus-gfCDC8HyOS186yzH0JLcsVz/view

eliminate restrictions on lower-cost housing types such as prefabricated or manufactured homes; and 3) creating affordable housing planning resources for member jurisdictions.

- Development activities, specifically providing large-scale technical assistance to entities that lead to the development of affordable housing.

The figure below visualizes the grant activities to demonstrate the variety of tactics that will be employed to better understand and address the barriers and opportunities for increasing offsite construction in Greater Boston, in partnership with stakeholders, including municipalities, manufacturers, labor groups, and community-based organizations. More detail on each of the proposed activities is explained below.



Activity 1: Convene a Regional Offsite Construction Working Group and Sub-Groups

Timeframe: January – June 2024

Major milestone/deliverable: Signed Memorandums of Understanding by June 2024

MAPC will form a working group to guide implementation of the grant. Stakeholders will include state and municipal leaders and regulators, affordable housing developers (including non-profit), manufacturers, architects, researchers, housing planners, regional and state labor partners, and general contractors. Many of these partners were engaged during the grant application writing process and some have supplied letters of support. Outreach was conducted with Arlington, Cambridge, Chelsea, Everett, Newton, Somerville, and Watertown, and all have shown interest in participating, if the grant is awarded. MAPC will do additional outreach with member municipalities to see who may want to join in this effort, beyond those engaged during the grant application submission period.

Participating cities and towns will sign Memorandums of Understanding (MOU) with MAPC to formalize each municipality's commitment to studying and eventually committing resources to create a pipeline of affordable housing units (the mechanics of which will be developed as part of the planning process, see Activity 2). Supplementary partner agreements with other stakeholders (such as researchers and subject matter experts) will be developed in this phase to specify roles and responsibilities.

In addition to forming the overall Working Group, MAPC will work with partners to assemble sub-groups to conduct research and planning activities outlined in Activity 2.

This task is a grant-eligible activity as it is a critical step in the development of a plan and proposal for an offsite manufacturing facility to support the production housing, including affordable housing. As the regional planning agency for the 101 cities and towns of Greater Boston and expert convener of a variety of coalitions, MAPC is uniquely positioned, and has substantial capacity, to lead this effort in partnership with participating municipalities and other stakeholders.

Activity 2: Offsite Construction Research and Planning

Timeframe: January 2024 – July 2025

Major Milestones/Deliverables: Meetings of sub-groups; engagement activities with stakeholders; briefing papers that outline research findings and recommendations; amended Memoranda of Understanding to address unit commitments, resident employment guarantees, and other provisions that may result from this research phase.

The second major activity constitutes the largest body of work associated with this initiative. The working group will convene the four sub-groups formed in Activity 1 to focus on different aspects of offsite construction technologies, including barriers to offsite construction and opportunities to generate good jobs producing affordable homes.

Sub-Group #1 Research Focus: Addressing regulatory barriers to offsite construction

Members: municipal and state regulators, developers, architects, manufacturers, lenders, etc.

Deliverable: briefing paper summarizing the sub-group's work and findings

MAPC will convene a sub-group of regulators, developers, manufacturers, lenders, and others who often navigate the permitting process to site and install modular housing. The sub-group will be focused on understanding offsite construction, through presentations from subject matter

experts and potential site visit(s) to manufacturing facilities and sites with modular development. Once the sub-group has a solid understanding of offsite construction, the work will shift to exploring the regulatory barriers – both regionwide and specifically in participating municipalities. Regulatory barriers may be found in local zoning codes, local and state building codes, permitting processes and requirements, or other controls. A focus group with construction lenders will increase understanding of financial regulations that may hinder the use of offsite construction methods. The sub-group will likely convene additional focus groups and conduct interviews to better understand regulatory conditions and opportunities for policy/regulatory interventions. Peer regions such as Chicago, Philadelphia, and San Francisco will be studied to understand where Greater Boston may be unique or similar and what case studies or best practices employed elsewhere may be applicable in Greater Boston. Findings from this research will be presented to the sub-group to inform recommendations for policy and regulatory change.

Sub-Group #2 Research Focus: Generating a project pipeline

Members: municipal leaders and staff; state housing partners; community-based developers

Deliverable: Potential amendments to Memoranda of Understanding to reflect sub-group recommendations; memo summarizing the sub-group's work and findings

MAPC will work with participating cities and towns to understand their unique housing needs and housing toolkits to support housing production. Cities and towns have a variety of different ways to influence housing production – through municipal housing authorities and affordable housing trusts; investments from Community Preservation Act funds; disposition of publicly-owned land, etc. MAPC will draw from existing municipal housing plans like housing production plans, neighborhood plans, or comprehensive plans – many of which have been drafted by MAPC – to understand the local context, identify resources to commit to modular development, and generate a list of likely sites and projects that could proceed once a manufacturing facility is up and running.

State entities also have resources to encourage and influence housing production. MAPC will convene the sub-group to work with state and municipal leaders and staff to explore different options for creating a pipeline of likely or permitted projects that could serve as an incentive for a new manufacturing facility to locate in Greater Boston. The sub-group will explore smaller scale projects that allow for more on the project learning, aiming to not negatively impact the existing employment systems. MAPC will work with individual municipalities to develop their pipeline and provide confidence of future construction. Potentially, state partners may identify opportunities to incentivize the facility or help cities and towns to meet build out their pipeline of units.

This sub-group will also discuss and recommend how to pace unit creation/installation to ensure housing production is increasing across all participating communities and how to track and evaluate unit placement. Tracking will be important to measure how this project advances fair housing and racial equity goals. Lastly, the sub-group will prepare guidance on how modular housing can be coupled with traditional construction methods to combat the overall housing shortage. This guidance could include identifying the types of development better suited for offsite construction components in the future, where prefabricated components could improve or

enhance older housing stock, or what sites might be better suited for modular or prefabricated homes.

Sub-Group #3 Research Focus: Generating Good Jobs for Boston Area Workers

Members: Representatives from Greater Boston Labor Council, Massachusetts Building Trades Council, Carpenters Union (North Atlantic States Regional Council), and/or other labor organizations; regional economic development planners and researchers; municipal leaders and staff; and other stakeholders, to be determined from subsequent outreach and engagement during Activity 1

Deliverable: Memo summarizing the sub-group's work, findings, and recommendations for minimum qualifications to be required of any manufacturing facility regarding jobs, wages, and benefits.

MAPC and the participating municipalities are committed to securing good jobs, benefits, and worker protections for local residents. Modern advancements in alternative construction technologies and modern offsite construction techniques mean that today, this segment of the construction industry can provide good-paying jobs with workforce development and training. We have been actively researching workforce development models associated with manufacturing housing types to support the creation of jobs and job training for local residents. Examples of unionized facilities and fair labor agreements have been employed in other parts of the United States, and as close as New Hampshire, as well as abroad. MAPC will convene this sub-group to research all of these issues and emerging best practices, alongside a variety of labor and workforce partners and economic development professionals to understand challenges and opportunities to securing good jobs, wages, benefits, and protections for local workers manufacturing and installing modular housing in Greater Boston. We also hope to better understand how onsite construction has already been utilizing offsite or prefabricated components, as we understand this is happening in Greater Boston. Additionally, part of this research will look into the impacts of expanding this type of manufacturing to employ historically under-resourced groups like women, people of color, and people with less educational attainment. For example, while the traditional construction industry employs fewer women (only 9% of the workforce today), manufacturing jobs offer women more of a chance at economic prosperity (30% of manufacturing jobs are held by women). These nuances will be explored as part of this sub-group's research to more fully understand how these two industries – aimed at the same goal of producing more housing – can both thrive and offer economic opportunity for local residents. The sub-group will also hold focus groups with local workers – in both construction and trade and manufacturing jobs – to better understand workforce challenges, opportunities, and needs.

The sub-group's work will culminate in recommendations for labor requirements to be included in any solicitation or incentives for the manufacturing facility. A briefing paper will also summarize the sub-group's engagement process, findings, and broader recommendations to set a precedent for creating good jobs at offsite construction facilities across Massachusetts. This research will be useful for regions across the country and complement existing research underway at HUD.

Sub-Group #4 Research Focus: Identifying Suitable Sites for a New Facility

Members: Municipal leaders and staff; economic development planners and researchers
Deliverable: Memo summarizing the sub-group's work, findings, and recommendations for manufacturing facility solicitation

MAPC has expertise in industrial/manufacturing sector research and recently completed a baseline study to better understand Greater Boston's industrial sector. The study, "[Land, Economy, Opportunity: Industrial Land Supply and Demand for Greater Boston](#)," assessed industrial space supply, industrial vacancy rates, industrial rents, and projected demand and will serve as a starting point for this sub-group's work to identify suitable sites for a new manufacturing facility. MAPC will review other regional and local economic development and industrial planning documents to guide and inform the group's work. Focus groups and interviews with owners and operators of manufacturing facilities will help the sub-group understand what site characteristics are most desired to best meet their needs and enable a facility to get online and running most quickly and efficiently. The sub-group will explore different options with partnering municipalities, including redevelopment of vacant industrial spaces, consideration of one large site vs. multiple smaller sites, etc. The sub-group will also explore the different incentives to include in the solicitation. The sub-group will make a recommendation to the overall Working Group about facility siting and work with the host municipality(s) and their legal counsel to prepare for Activity 4.

The findings and recommendations from these four sub-groups will be shared with the Working Group and will inform Activity 3.

This task is an eligible activity under this grant as it is a planning activity to develop a proposal for a manufacturing facility to support the production of affordable housing for low- and moderate-income households. MAPC and participating jurisdictions, including the City of Boston Housing Innovation Lab (which has already compiled substantial research in these areas), have the capacity and willingness to accomplish the research tasks associated with this activity.

Activity 3: Preparation and Issuance of Solicitation for Manufacturing Facility or Facilities

Timeframe: July-December 2025; Responses due March 2026

Deliverable: Solicitation, may take the form of a Notice of Funding Opportunity (NOFO) and/or Request for Proposals (RFP)

With the research and recommendations provided in Activity 2, MAPC will work with the Working Group and partner municipalities to prepare recommendations for solicitation that may include, but are not limited to, any of the following components: seed funding for a manufacturing facility (coming from this grant proposal), land, specialized financing arrangements, details about a development pipeline, and expedited permit pathways. The host municipality(s) will finalize and advertise the solicitation in accordance with their local procurement processes.

This task is an eligible activity under this grant as it seeks to incentivize the production of affordable housing for low- and moderate-income individuals by enhancing regional infrastructure for the creation of affordable housing units. As the regional planning agency for the 101 cities and towns of Greater Boston, MAPC is uniquely positioned, and has substantial

capacity, to provide technical assistance to develop recommendations for the solicitation, in partnership with participating municipalities. The host municipality(s) will lead on issuing the solicitation, and all local/state procurement processes required will be followed. All of the partnering municipalities, in addition to MAPC, have access to legal counsel to help in preparation of the solicitation.

Activity 4: Select and Designate a Developer(s) for Manufacturing Facility/Facilities

Timeframe: April-May 2026

Deliverable: Legal documents to confirm selection of chosen developer

Upon receipt of responses to the NOFO, RFP, or similar offering document, MAPC will work with the municipality(s) hosting the facility(s) to convene a review committee (formed with input from the Working Group and consisting of at least one designee from each participating municipality and stakeholder representatives) to select and designate a developer for the manufacturing facility or facilities. MAPC and the municipality(s) overseeing the procurement process will consult with legal counsel, as needed, to ensure all procurement and selection processes adhere to necessary federal and state laws and regulations.

This task is an eligible activity under this grant as it will facilitate the production of affordable housing units through the creation of infrastructure necessary for the development of affordable housing.

Activity 5: Development of an Implementation and Phasing Plan

Timeframe: June 2026-December 2026

Deliverable: Implementation and Phasing Plan

Activities 5 & 6 may occur simultaneously. The development of an implementation and phasing plan to permit, construct, and begin manufacturing modules will be created. MAPC and the host municipality(s) will work with the chosen developer, seeking input from the Working Group and sub-groups as necessary. The implementation and phasing plan will be shared with the Working Group and sub-groups for review and comment. The phasing will allow for a coordinated “unit ordering” process once the manufacturing facility is constructed. The Working Group will engage the selected developer/manufacturer to understand the facility’s capacity in terms of output and sequence production of housing units in alignment with projected demand and availability of sites.

As part of this Activity, MAPC, the municipalities, and (if they wish) labor organizations, will work to ensure that a package of wages, benefits, and worker protections are available to all workers to be employed at the facility, as well as workers charged with installing prefabricated modules on-site. MAPC will coordinate with local and regional workforce boards to help generate trainees and employees. MAPC will also coordinate with unions and other labor organizations to ensure that their members have the opportunity to seek employment at the facility, to participate in on-site installation, and to establish connections, if possible, between labor apprentice and training programs and the search process for workers.

As a testament to our commitment to workforce development and our ability to secure funding for impactful initiatives, it is noteworthy that in the past, MAPC partnered with the City of Boston as the lead applicant to successfully secure funding from the Economic Development Administration. This funding supported the establishment of the Greater Boston Regional Workforce Training System and is catalyzing job creation, forging pathways that lead individuals to attain family-sustaining wages, access employer-sponsored benefits, and pursue educational advancement. Drawing upon the invaluable experience gained from this successful venture, MAPC is well-positioned to leverage our expertise and insights to enrich the workforce development activities outlined in this proposal.

Throughout this endeavor, we are committed to actively engage in outreach, identify training needs, and facilitate employment opportunities for the residents of the participating municipalities. Additionally, we are dedicated to ensuring that individuals from diverse racial backgrounds, women, and other marginalized groups who contend with higher rates of unemployment or underemployment are included in our efforts.

This task is an eligible activity under this grant as it is a planning activity to ensure the manufacturing facility is constructed and enabled to support and produce affordable housing for low- and moderate-income households.

Activity 6: Support the Permitting and Development of Manufacturing Facility/Facilities; First Units Manufactured

Timeframe: June 2026 – December 2029

MAPC, the host municipality(s), and the Working Group will support the developer through the permitting and development process in the municipality where the facility or facilities is/are proposed to be built. Based on our conversations with stakeholders and subject matter experts, we anticipate that a facility/facilities could be constructed (to the point of receiving a certificate of occupancy) as quickly as two years after gaining site control and appropriate financing. We hope that the facility will be online and producing modular housing units by the end of 2030. There is a strong potential for 500 modular housing units being in the pipeline or constructed by the end of 2030, with each year after this grant period ends resulting in additional modular homes that can be sited and installed throughout Greater Boston over the following decade(s). This task is an eligible activity under this grant as it will facilitate the production of affordable housing units through the creation of infrastructure necessary for the development of affordable housing.

Activity 7: Community Engagement

Timeframe: Throughout, beginning in January 2024

Deliverable: Community Engagement Plan; project webpage and newsletter with periodic updates to stakeholders and interested parties

MAPC will work with the Working Group to create a community engagement plan that centers on inclusive and frequent communication with a variety of stakeholders. MAPC and the Working Group will work to inform the general public about the project and the potential impact to addressing local affordable housing and workforce needs. A project webpage will be created, and

a project newsletter will allow anyone to subscribe and follow the project progress. Focus groups, interviews, pop-up events, online forums, and other engagement strategies will be employed to hear from project stakeholders and local residents, particularly those who have been historically underrepresented (renters, people of color, people with lower incomes, veterans, seniors, people with disabilities), at key points in the process. The project budget includes gift card incentives or other forms of compensation for involvement of residents of protected classes in the grant project, including one-off engagement events or participation the Working Group or sub-groups. MAPC will work with partnering municipalities and their existing communication channels to further expand the project reach.

An important goal and outcome of the project's community engagement strategy will be to shift the perception of prefabricated or modular housing across different groups. MAPC and the Working Group will hold focus groups to gain a better understanding of how modular housing is perceived today. Depending on the feedback received during these focus groups, MAPC and the Working Group will design a public campaign to share information about recent innovations in the field and how this type of manufacturing can complement traditional construction methods, address housing challenges, and provide good jobs with benefits for local residents.

This task is an eligible activity under this grant as it is a critical step in the development of a plan and proposal for an incentive package to support the production of affordable housing, including the research products and recommendations to get to the point of issuing a solicitation. MAPC is uniquely equipped, and has substantial capacity, to lead this effort in partnership with participating municipalities and partners as MAPC, as a whole, and particularly the [Community Engagement Department](#), is dedicated to equitable, inclusive, and innovative engagement. The Community Engagement Department will help craft and implement the engagement plan, but they are also well-versed in evaluating and adapting engagement efforts as projects progress and will be prepared to do this for this project. This will ensure that the Working Group and sub-group is not only guided by technical information and research but also the feedback from people who will one day live in modular or prefabricated homes.

Overcoming Barriers

The City of Boston's Housing Innovation Lab has spent the last few years researching alternative construction technologies to understand barriers and opportunities. Here, we outline findings from this research that we hope to address through this grant project, if awarded.

Barrier #1: Construction Timelines. Modular Construction Has Potential to Reduce Construction Timelines and Waste, Both of Which Translate into Cost Savings

A preliminary analysis completed by the Boston Housing Innovation Lab of construction budgets and timelines for mid-sized housing development projects in Boston, New York City, and Los Angeles concluded that modular construction has the potential to reduce construction timelines by 20-30%, since modules can be manufactured while foundations, masonry, and slab work happens simultaneously on-site. Timeline reductions continue to grow as local manufacturers and other players progress along the learning curve. Shorter timelines, in turn, translate to reduced carrying costs of construction financing.

Offsite construction methods also yield considerable reductions in construction waste. Fabricating modules in a controlled factory setting enables manufacturers to pass unused materials from one project to the next without the risk of physical degradation or added transportation costs. Because modular units are not exposed to the elements during construction, they also tend to be more durable than materials stored and assembled on an exposed project site. Offsite construction techniques are similarly efficient at the point of demolition. When a modular building needs to be moved or demolished, volumetric units can be disassembled and even reused on a different project site, potentially extending the lifespan of a building.¹⁵

Barrier #2: Lack of Local Manufacturing Facilities. Siting a new facility within Greater Boston will decrease transportation and logistics costs, leading to lower housing costs.

Transportation and logistical challenges increase as the distance between the manufacturing facility and module-placement site increase. Given the limited number of manufacturing facilities in Massachusetts, most modules that end up in Greater Boston are trucked across state lines. This presents challenges, as states enact unique requirements for trucking operations, meaning that rules for lead times and costs, allowable times of day for transport, escort car rules, etc. may differ. State requirements on dimensions, weight, and carrier connections of offsite construction product freight that can also impact the design and associated cost of offsite construction for housing, sometimes even eroding the method's financial benefits over traditional construction techniques. Locating a facility in Massachusetts minimizes costs and coordination needs for transportation and logistics, leading to lower housing costs overall.

Barrier #3: Local Opposition. Modular Construction Techniques Can Result in Less Disruption to the Local Neighborhood

Traditional construction methods typically result in significant disruptions to residents and businesses surrounding a given project site, ranging from air and noise pollution to scaffolding, sidewalk closures, and increased traffic congestion. Disturbances often continue for months, if not years on end, and can deepen community opposition to new housing development. Modular construction techniques lead to a substantial reduction in the amount of work to be completed on site, which in turn compresses project timelines and diminishes interruptions to neighborhood life. In some modular multifamily projects, 'setting,' or the assembly of prefabricated modules on site, can be completed within a matter of days or weeks.

Lessons Learned

Modular and prefabricated housing is already being produced and sited in Greater Boston; however, it has been difficult to site a facility here to make it a more cost-effective, attractive option for developers to explore. Understanding these local limitations and experiences, this proposal is also informed by the successes and challenges of similar efforts undertaken in Minneapolis, Minnesota (Minneapolis Public Housing Authority), Boulder, Colorado (the City

¹⁵ <https://learn.aiacontracts.com/articles/modular-construction-is-a-sustainable-way-to-build/>

of Boulder), New York City (Capsys), and the San Francisco Bay Area (Katterra), as well as Boston’s study of local barriers to scaling offsite construction methods, as described below.

The ***Minneapolis Public Housing Authority (Minneapolis, Minnesota)*** has demonstrated successful modular construction for affordable housing through a scattered-site, multi-unit project that will create 84 housing units across 16 small scale apartment buildings. Key ingredients for success include innovative financing and procurement strategies to make funds available earlier in the development process, features we intend to incorporate into our strategy.

The ***City of Boulder, Colorado*** spearheaded construction of a modular manufacturing facility to support affordable housing production. Scheduled to be completed in early 2024, the factory is slated to produce 12 to 15 modular homes per year in the first few years. The homes will be high-quality all-electric structures powered by solar energy, and will be permanently affordable to low-, moderate-, and middle-income households. While the project continues to move forward, it has faced significant delays due to abutter opposition. Informed by Boulder’s experience, we’ve included substantive, meaningful community engagement as part of the research and planning process to designate potential sites for a facility or facilities. The passing of the state-mandated Section 3A MBTA Communities, which requires that nearly all the municipalities in the Greater Boston region have at least one zoning district that allows multi-family zoning by right, also minimizes the impact of local opposition putting a halt to much needed affordable housing production located near transit and other dense, walkable neighborhoods.

In ***New York City, Capsys***, a private modular manufacturer, opened a facility on leased land in Brooklyn to support construction of modular projects on nearby sites. The factory’s close proximity to project sites allowed modules to be produced and staged with significantly lower transportation costs (as compared to projects sourcing modules produced in nearby factories in Pennsylvania). While initially successful, Capsys was ultimately unable to continue its operations when the property lease ended, and the owner decided to pursue a different use for the site. Our strategy is informed by Capsys’ experience and the importance of having site control to support a manufacturing facility’s long-term sustainability. Our proposal will leverage publicly-owned land or public-private partnerships to limit challenges with term-limited lease agreements.

The downfall of modular manufacturer ***Katterra*** illustrates the importance of selecting manufacturers familiar with the construction industry. Founded in 2015, startup manufacturer Katterra opened a facility in Tracy, California, with over \$2 billion in investments. The company ultimately went bankrupt before scaling up production, and the facility was acquired by Volumetric Building Companies in 2021. Industry experts posit that Katterra’s demise was caused by the fact that Katterra was first and foremost a technology company that was attempting to change construction, as opposed to a construction company that embraces the use of technology to accelerate production.¹⁶ We will take this case study into consideration when preparing the RFP or NOFO and in ultimately selecting a manufacturer to develop a facility. By partnering with construction professionals throughout this process, we will also hopefully foster new opportunities for the two industries to learn and benefit from one another.

¹⁶ <https://www.constructiondive.com/news/volumetric-building-companies-modular-builder-CEO-katterra-failure-spectacular/610565/>

This grant project will complement the “HUD Breakthrough Pilot Handbook: Growing Offsite Construction for Housing through Regional Pilot Projects” Grant Proposal submitted by the City of Boston and MOD X. If awarded, both grant projects will be working in close coordination to share lessons learned.

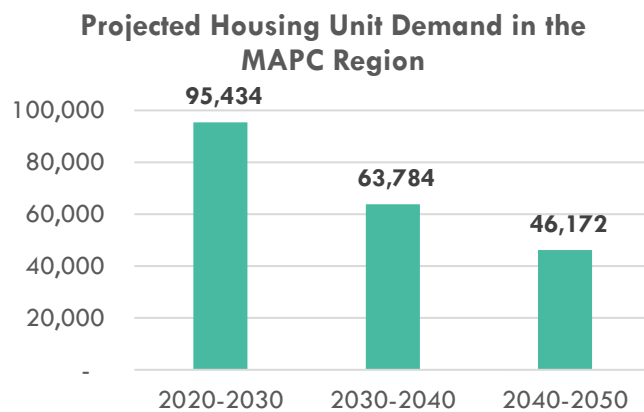
Alignment with Existing Planning Initiatives

Incentivizing the use of offsite construction methods through the siting of a nearby manufacturing facility aligns with a variety of existing planning efforts, helps the region plan for expected population and household change, and is consistent with our State and local land use, sustainability, economic development, and equity and inclusion initiatives.

Planning for expected household change

MAPC prepares forecasts of population, households, and employment by sector out to the year 2050. By the year 2050, the MAPC region will need 200,000 new homes to accommodate population growth. Nearly half of that demand will occur by 2030. Because of the “business as usual” model assumptions, this is a bare minimum number. It is expected to grow with more welcoming national immigration policies and removal of

zoning barriers under Section 3A MBTA Communities (multi-family zoning). As production increases and housing prices stabilize, more people may also choose to move to the Greater Boston region due to high quality of life and access to good jobs. Given this housing unit demand, it is imperative that municipalities in the Greater Boston region explore all avenues to efficiently produce quality and affordable new housing. This proposal, by exploring offsite construction as a complement to traditional construction methods, can help us meet our housing need.



Consistency with Land Use and Transportation Initiatives

By increasing our region’s capacity to construct new housing units more efficiently, our approach is in alignment with local and regional planning initiatives, including the aforementioned Multi-Family Zoning Requirements for Communities near Transit Stations (MBTA Communities). Removing zoning barriers like this is one significant step towards meeting housing production goals, but we also must think creatively about how to fast-track production of quality and safe housing in these smart growth locations. This grant proposal offers a solution to work alongside our traditional construction methods for producing new homes. Under Activity 2, when assessing and determining a project pipeline for a new manufacturing facility, MAPC and the participating municipalities will be focused on identifying sites that have access to transportation options and other neighborhood amenities like parks, public services, and jobs. The project pipeline will also consider a community’s current housing

stock, documented housing need, and municipal population and household projections. Housing options that are in short-supply in a community – such as smaller, more affordable units for aging residents or family-sized subsidized apartments for families earning lower incomes – can be targeted for the project pipeline.

Consistency with Environmental Initiatives

Scaling up the use of offsite construction technologies for housing construction will advance regional and local environmental initiatives. MetroCommon2050, the regional plan, calls for more energy-efficient buildings and climate-smart growth. Aligned with state goals, the region aims to make deep cuts in greenhouse gas emissions by 2030 and reach net zero emissions by 2050. Furthermore, the Metropolitan Mayors Coalition has formed a Climate Task Force to coordinate regional and cross-governmental work to prepare for climate change. Participating municipalities recognize that housing and climate goals overlap and see the opportunity for this project to advance both goals. An example of how cities are connecting climate and housing planning is Boston’s Climate Action Plan, released in 2019, which charts a clear course for reaching the City’s 2030 and 2050 carbon reduction goals. Boston’s buildings account for approximately 71 percent of our community carbon emissions and represent the greatest opportunity for emissions reductions. Decarbonizing Boston’s building sector depends on shifting to zero net carbon (ZNC) new construction by 2030 and retrofitting and electrifying at least 80 percent of our existing buildings over the next 30 years. Advances in building materials and offsite construction technologies hold great promise in helping the City, region, and state reach its climate goals.

Consistency with Economic Development Objectives

Siting an offsite manufacturing facility in Greater Boston will generate economic development opportunities through the creation of quality jobs and locally produced building components. Jobs in manufacturing facilities have the potential to offer better working conditions than those on traditional stick-built construction projects due to their climate-controlled nature. Modular construction is generally regarded as a safer method than traditional construction methods; a 2021 peer-reviewed academic journal article by Gilsu Jeong et al., reports, “*there is also an opportunity to reduce safety accidents [in manufacturing facilities] because [they are] not profoundly affected by external environmental factors, such as rainfall and wind. Workers can become familiar with the workspace and work because they perform repetitive tasks in manufacturing factories.*”¹⁷

The sub-group focused on identifying appropriate site(s) for a new facility will rely on state, regional, and local economic development policies and plans. Many of the cities and towns throughout Greater Boston have vacant industrial sites that are ripe for redevelopment. MAPC will work with its member municipalities to identify and study industrial redevelopment opportunities that are located in areas with good transportation access, keeping in mind that freight access is important for transporting modules, while transit access is also important for workers. If necessary, MAPC will facilitate conversations with the facility developer and participating municipalities to include transportation demand management strategies within the NOFO and/or RFP to ensure traffic to and from the site is managed effectively and does not negatively impact the community.

¹⁷ <https://www.tandfonline.com/doi/full/10.1080/13467581.2021.1877141>

Consistency with Equity and Inclusion Initiatives

Our proposal most directly advances equity and inclusion initiatives by creating new jobs with rich benefits for local residents, especially those who have historically not had access to such opportunities. With labor partners, we hope to partner and continue to diversify local workers to ensure the local workforce reflects the diversity of the community in which they work; expanding the share of affordable housing, particularly in high opportunity neighborhoods to make strides towards decreasing the racial and social wealth gap; and recognizing transportation equity as a key consideration for siting new facilities and jobs.

To further provide an example of how this project and its associated workforce development and labor components are consistent with equity and inclusion initiatives, we provide some local context from the City of Boston. The proposal's goal to create jobs will allow local construction projects to satisfy, or exceed, the requirement for job hours completed by Boston residents, women, and people of color as established by the [Boston Resident Jobs Policy](#). Under Activity 2, MAPC will research municipal equity and inclusion policies around economic opportunity to ensure labor agreements and employment considerations align with regional and local commitments to racial and social equity.

Research indicates that the construction industry continues to grapple with workforce availability challenges, which have resulted in rising costs in housing design and construction (Nguyen et al., 2020). Off-site construction has emerged as a recognized approach to tackle the diminishing labor force issue by optimizing labor efficiency and productivity (Smith, 2016). Research also indicates that presently nationally, nine percent of the construction labor force comprises women, in contrast to the manufacturing sector, where a 30-percent female workforce is more typical. Offsite manufacturing holds promise for drawing in a workforce that has been less inclined to enter the construction industry as a whole. Further investigation is necessary to ascertain effective strategies for recruiting female and minority demographics into offsite manufacturing employment, thereby enhancing diversity within the labor force. Our strategy includes engagement methods to bring key stakeholders together to identify challenges and opportunities, adding to the local and national body of research around off-site construction.

Furthermore, our proposal will allow our region to accelerate the pace of affordable housing production, allowing for a greater number of low- and moderate- income households to secure safe, stable housing in the region. Through Activity 1, MAPC will reach out to a variety of cities and towns to share information about this project and encourage participation to expand affordable housing across the region. Outreach efforts will hone in on the importance of expanding production of affordable housing in areas with high opportunity.

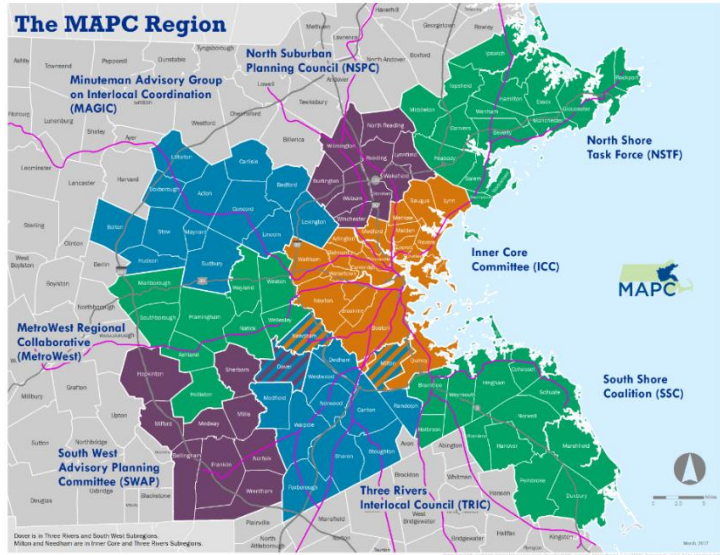
Lastly, when carrying out Activity 2 and assessing potential sites for a new facility(s), transportation equity will be considered. Sites that are accessible by public transportation will be prioritized to expand access to those who may not be able to afford a personal vehicle or expensive transportation costs. Offsite construction jobs may be viewed as more reliable for workers in this regard, since onsite construction sites may or may not be easily accessible and may require workers to pay higher transportation and parking costs to commute to and from work.

Simplification and harmonization of land-use regulations across multiple municipalities

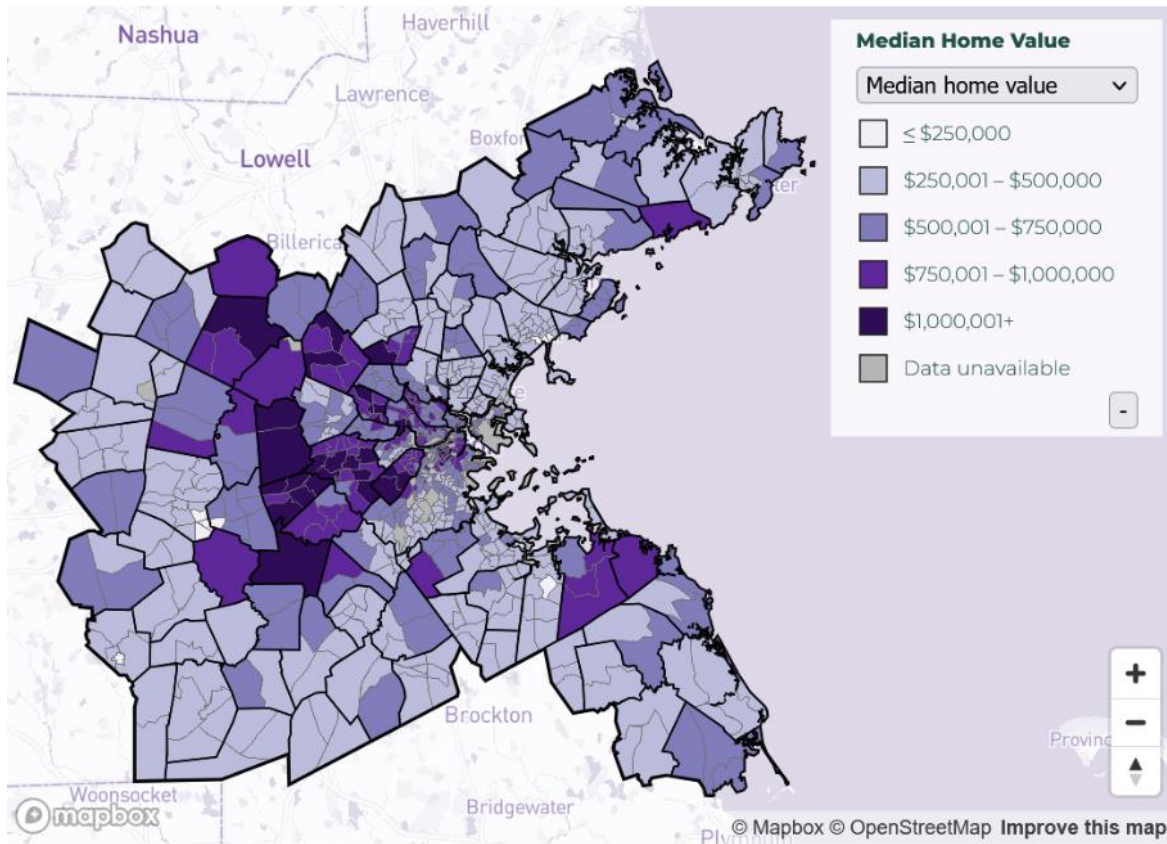
Research into regulatory barriers under Activity 2 will highlight opportunities for regulations to be amended to support modular or prefabricated construction. Particularly, the recommendations will encourage municipalities to adopt similar regulations when possible. Engaging state officials in this conversation can also influence statewide regulations such as building codes.

Geographic Scope

The geographic scope spans multiple geographies. Research and planning activities will focus on the MAPC region, comprised of 101 cities and towns. When possible, MAPC will conduct outreach and engagement through the different geographic subregions, shown in the below map. There will likely be opportunities to apply recommendations and findings across the State of Massachusetts, and state partners involved in the project will help advance these, when possible.

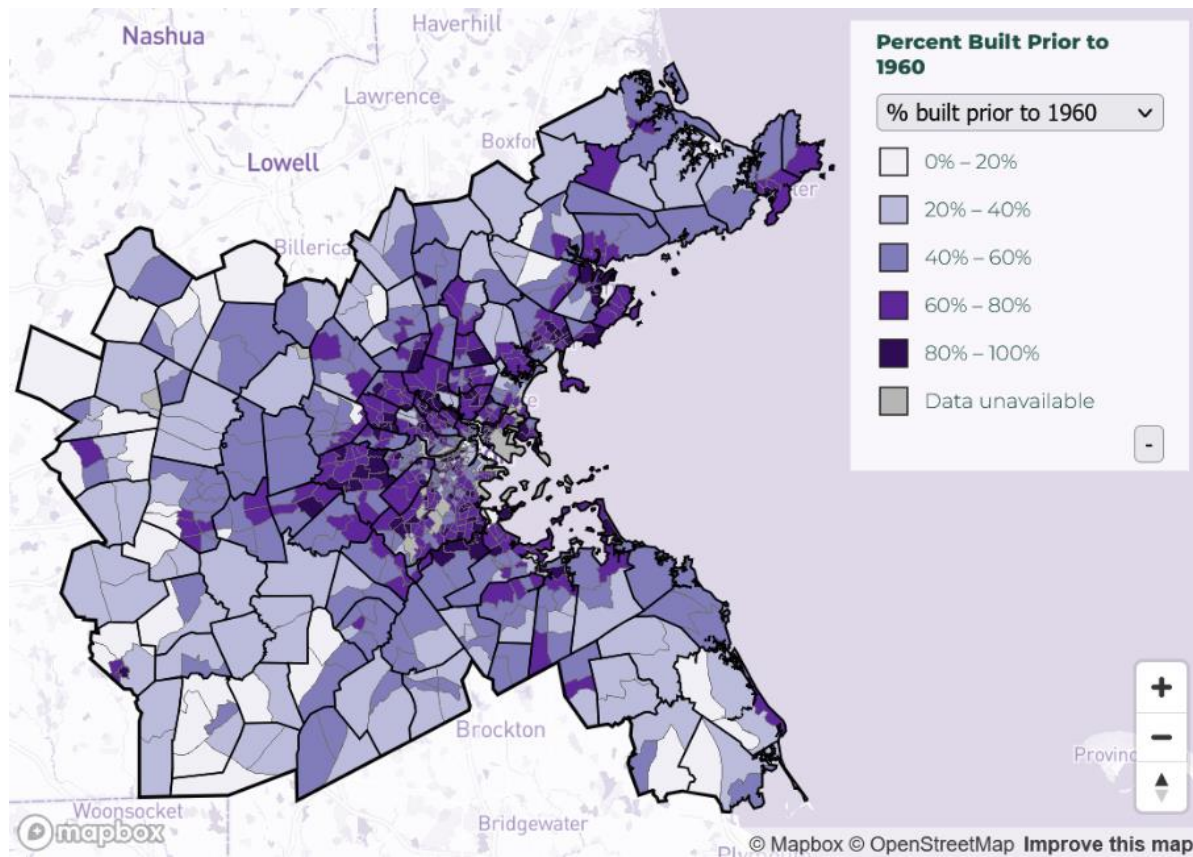


Siting of the new manufacturing facility(s) is likely to occur in one of the cities or towns participating in the Metro Mayors Coalition Housing Task Force. Housing production is most likely to occur in one of the Housing Task Force communities, but cities and towns interested in participating in this project will not be limited to this group of communities. Outreach under Activity 1 will refine the geographic scope for subsequent grant activities.



Producing more housing and finding ways to lower costs and deliver new homes more quickly benefits all of the communities in Greater Boston. As a region, housing is gravely unaffordable (see map below showing median home prices in the MAPC region) and options are severely limited due to exclusionary zoning policies and local opposition to new growth. This project seeks to change public perception of modular and prefabricated housing and show how it can benefit communities and provide much needed affordable housing to low- and moderate-income households.

Research activities embedded in this project will focus on how modular construction can help address the region's aging housing stock (shown in map below). and create new housing choices as preservation and infill development/redevelopment takes place.



Key Stakeholders and Engagement

As this grant application was prepared, MAPC conducted outreach with cities and towns, partners in labor and workforce development, state housing partners, and subject matter experts in modular and prefabricated construction methods. The full list of potential partners engaged as this proposal was developed is listed below (some of these partners were able to provide letters of support ahead of the application deadline):

- Municipal outreach included Town of Arlington, City of Boston, City of Cambridge, City of Chelsea, City of Everett, City of Newton, City of Somerville, and City of Watertown.
- State housing partner outreach included Massachusetts Housing Partnership, Executive Office of Housing and Livable Communities, and MassHousing.
- Labor outreach included Massachusetts Building Trades Union and Greater Boston Labor Council.
- Housing industry outreach included researchers, subject matter experts, architects, and developers with experience in offsite construction.

If awarded, one of the first grant activities will be doing an in-depth stakeholder mapping exercise to formalize partners and form a Working Group. Once an initial Working Group is formed, MAPC will facilitate another round of stakeholder mapping to potentially expand the Working Group, if necessary, but more importantly, the stakeholder mapping activity will inform a detailed community engagement plan that will be adjusted throughout the project to ensure grant activities are carried out transparently and inclusively. The following list denotes potential stakeholders who are likely to be engaged through this grant project: Persons with unmet housing needs; Residents of public housing or other affordable housing units; Persons from all protected class groups under the Fair Housing Act; Regional and State public agencies that provide funding or technical assistance for housing, transportation, and social services (e.g., Massachusetts Housing Partnership, MassHousing, MassDevelopment, Executive Office of Housing and Livable Communities, Citizens' Housing and Planning Association (CHAPA), etc.); Community organization such as community development organizations and other community-based groups; For-profit and non-profit housing developers; Architects; Community Land Trusts; Housing Authorities; Advocacy organizations; Owners of modular and prefabricated manufacturing facilities; Labor organizations; Construction industry workers; Economic development organizations; Workforce development organizations; and Subject matter experts and researchers focused on offsite construction technologies.

To solicit input from and collaborate with stakeholders in developing this application, MAPC shared the application via a [public notice on its website](#), published a blog post, and held a public hearing. The public hearing was held via Zoom on Monday, October 23 at 3pm. MAPC also shared the application with municipal partners, labor representatives, state housing partners, and other allied organizations. The proposal was also shared with subject matter experts focused on offsite construction research. MAPC met individually with several of these different stakeholders to help shape this proposal, and MAPC looks forward to finalizing participating municipalities and continuing to refine the proposal via the PRO Housing Action Plan process, if awarded. Particularly, early engagement with residents of affordable housing will need to be conducted as part of the Action Plan process.

Minimal feedback on the grant proposal was received during the public comment period. The comment provided (see Attachment A) highlighted the differences between offsite and onsite construction and underscore the need for more focused research and investigation to understand the different approaches necessary to make modular construction viable and successful. No comments received required adjustment to the overall project proposal. MAPC looks forward to engaging with those who participated in the public comment period during the next phase of PRO Housing (creating action plans), if awarded funds.

Affirmatively Furthering Fair Housing

As has been demonstrated earlier in this application, Massachusetts is a leader in adopting policies to advance the production of affordable housing and in allocating funds to affordable housing production and preservation. Massachusetts, MAPC, and participating municipalities are committed to affirmatively furthering fair housing. MAPC has worked with many of the participating municipalities to advance local fair housing initiatives. Our proposal seeks to overcome barriers to the production of affordable housing for low- and moderate- income

households by tackling both the time it takes to produce new housing units, the cost of building new units, and the disruptive nature of traditional construction methods and impacts to neighboring residents and property owners. By accelerating the pace at which new affordable housing units can be constructed and placed in service, our proposal will increase the supply of affordable housing units in Greater Boston. New units will be marketed and leased in accordance with Fair Housing and AFFH policies in place under each of the participating municipalities (e.g., through the lottery process), which is designed to ensure opportunities are available for underserved communities.

Promoting desegregation

Sadly, because of decades of under-production and loss of rent control policies, the majority of cities and towns across Greater Boston have become “high-cost” communities where it is hard for moderate or low income families to find affordable housing. Affordable housing opportunities in all neighborhoods across Greater Boston are desperately needed. Due to the wide disparity in income and net wealth between white and BIPOC households, neighborhoods lacking housing units affordable to low- and moderate-income households are widely inaccessible to many BIPOC households, fueling segregation. Our proposal promotes desegregation by planning to accelerate the pace with which new affordable housing units can be produced and reducing the cost to construct them.

Expanding housing choice in new parts of the region

Our proposal is designed to ensure that affordable housing units are not concentrated in low-opportunity areas by accelerating the pace at which affordable housing units can be produced and distributed throughout Greater Boston. By producing new housing in a manner that is less disruptive, new affordable units can be placed on infill sites across the region, providing affordable housing opportunities in well-resourced areas that would otherwise be unaffordable to low-and moderate-income households and where neighboring property owners are more likely to oppose new development based on the aforementioned research on neighborhood participation at public meetings. As previously mentioned, this proposal is complemented by the significant zoning reform that is happening concurrently across Greater Boston, where all cities and towns must remove zoning barriers to multi-family housing. These zoning changes will be adopted by 2025 and will make infill development and associated permitting processes much more efficient, due to the removal of zoning barriers.

Addressing unique housing needs

Offsite construction methods are effective at developing housing units to accommodate the unique housing needs of members of protected classes because while the greatest benefits of offsite methods are realized through standardization of unit specifications, individual customization is part of the design process. As such, units can be designed and built to accommodate the needs of protected classes.

Implementation of fair housing plans

As a regional planning agency, MAPC does not prepare a fair housing plan. MAPC is committed to fair housing, as evidenced in other sections of this proposal. As part of this project, the participating municipalities will supply their fair housing plans under Activity 2 and the Working

Group and sub-groups will work to incorporate fair housing recommendations into overall project recommendations to continue commitment to affirmatively furthering fair housing.

Mitigating Risk of Displacement

The use of offsite construction methods would allow us to densify our supply of affordable housing in the region, reducing displacement risk. Our proposal does not directly call for the demolition or rehabilitation of housing units, and we are committed to ensuring that our proposal does not result in the displacement of residents. MAPC will work with the participating municipalities to engage residents of neighborhoods where units may be constructed, to understand displacement concerns and offer solutions to minimize impacts of neighborhood change. The use of modular construction reduces displacement by decreasing the disruptive nature of new construction projects on sites with existing residential units, removing the need for existing residents to move during construction.

Meeting housing needs for residents with disabilities

Offsite construction methods are effective at developing housing units to accommodate the unique housing needs of people with disabilities because while the greatest benefits of offsite methods are realized through standardization of unit specifications, individual customization is part of the design process. As such, units can be designed and built to accommodate the needs of people with disabilities to ensure compliance with the Americans with Disabilities Act (ADA) and accessibility requirements under the Fair Housing Act. Units with design features to accommodate people with disabilities can be manufactured separately from units with standard specifications, the details of which can be arranged with the selected manufacturer. By accelerating the pace at which we can produce new housing units in the region and reach the density of housing units on infill and transit-oriented development sites in close proximity to transportation and supportive services needed to support diverse populations, our proposal will support independent living. Since we anticipate that affordable units produced by the manufacturing facility will be subsidized using City, State, and Federal funds, units will be designed and marketed in accordance with City, State, and Federal regulations.

Implementation of Project

In terms of siting a manufacturing facility or facilities in the region, community and stakeholder engagement throughout all phases of project planning and implementation will be critical to minimize delays and barriers posed by litigation, environmental review, and regulatory/permitting processes, including design review. To minimize hurdles imposed by local permitting requirements, a key activity in our proposal includes studying and streamlining regulatory and permitting pathways for projects developed using offsite construction methods. As a state with an approved third-party inspection infrastructure for plan review and inspection of offsite components, Massachusetts has a favorable regulatory environment for offsite construction methods. If a manufacturer has been approved by the State, so long as the modules have a State stamp, additional inspection/approval by the local jurisdiction in which the modules are placed is not required. As such, and as has been confirmed by conversations with stakeholders and subject matter experts, communication between approval agencies and education about offsite construction methods is a key hurdle to ensuring a smooth process to shepherd projects through the approvals process.

Equity-informed proposal

MAPC and its partners have committed to advancing racial and social equity. Greater Boston is rich with research, resources, and other educational materials that informed this proposal and our general approach to planning projects overall. Namely, MAPC's State of Equity Policy Agenda is a touchstone for MAPC's work to reduce inequities. Our proposal is also informed by conversations with Boston's Office of Equity and Inclusion, specifically around the development of a strategy to ensure that job opportunities created by the manufacturing facility are equitably distributed to women and people of color.

Supporting minority-, women-, and veteran-owned businesses during the housing production process

Each of the participating communities have local goals and strategies in place to support minority-, women-, and veteran-owned businesses. As part of Activity 2 research, MAPC will collect these policies to inform labor recommendations and standards for the future developer of the manufacturing facility(s). To provide one municipal example, the [Boston Resident Jobs Policy](#) and [Women and Minority Business Owned procurement requirements](#) will be used as model requirements for ensuring that minority-, women-, and veteran-owned businesses are engaged and supported. In developing these W/MBE procurement requirements, the City's Equity and Inclusion Unit engaged hundreds of small and local W/MBE businesses to understand the challenges and barriers that confront them in operating and participating in City contract opportunities. The City ultimately contracted with a consultant to prepare an in-depth disparity study, which found substantial disparities between the availability and utilization of minority- and woman-owned business enterprises in City procurement. As a result, the City established overall annual aspirational goal of 25% minority- and woman-owned business enterprise utilization on discretionary contract and procurement spending, and methods of tracking progress towards these goals.

Other equity considerations for Greater Boston

Research indicates that off-site construction offers a substantial potential to diversify the construction workforce by including women and individuals with fewer skills or employment challenges. This approach has the potential to yield considerable advantages for both families and the environment, including reduced commuting and enhanced job stability. However, there is a substantial knowledge gap that necessitates further research to ascertain optimal methods for recruiting, retaining, and training in this field that we seek to address and research in this proposal.

Evaluation

We will evaluate the effectiveness of our effort by closely monitoring the number of affordable units produced by the facility (by affordability tier), the locations where these units are placed, and the race and ethnicity of residents in those units. With this information, we will be able to ensure that our effort is effectively allowing for the distribution of affordable housing units across the region, increasing access to high opportunity areas for low- and moderate-income households, and expanding the supply of housing in high-opportunity areas affordable to low- and moderate-income households, the majority of which are BIPOC households.¹⁸

¹⁸ 67% of households in Boston earning 80% of AMI or below are BIPOC households. Source: 2017-2021 American Community Survey 5-Year Estimates, PUMS; HUD 2021 income limits.

Budget and Timeline

MAPC requests a total of \$6M over six years. The amount requested by activity is listed below.

Activity		Estimated Timeframe	Requested Amount
1	Convene a Working Group and Sub-Groups	Jan. – June 2024	\$100,000
2	Research and Planning with Four Sub-Groups	Jan. 2024 – July 2025	\$500,000
2.1	Development Pipeline – Grant Funds to match municipal investment (up to \$300,000 per participating municipality, up to 9 municipalities)	Jan. – July 2025	\$2,700,000
3	Preparation and Issuance of Solicitation	July 2025 – March 2026	\$150,000
3.1	Financial Incentive for Solicitation	July 2025 – March 2026	\$2,000,000
4	Solicitation Review and Selection	April 2026 – May 2026	\$50,000
5	Development of Implementation and Phasing Plan	June 2026 – Dec. 2026	\$150,000
6	Support Entitlement/Development of Facility	June 2026 – Dec. 2029	\$100,000
7	Community Engagement	Jan. 2024 – Dec. 2029	\$250,000
Total Requested Grant Funds			\$6,000,000

MAPC, in its role as a regional planning agency that often provides public consulting services to municipal clients, is well-versed in creating realistic and cost-effective budgets to effectively carry out planning and research activities. The bulk of the grant funds will be used as leverage for the incentive package.

If HUD awards a different dollar amount than requested, MAPC is prepared to adjust the scope of work. The minimum funding amount that would allow MAPC and partner communities to carry out this work successfully is \$3M dollars. This would allow for all of the research components to move forward and provide a significant financial incentive for the facility solicitation. If HUD awards the full requested amount, this increases the likelihood of more units being constructed, as it allows for participating municipalities to leverage HUD grant funds against their own local resources to increase the project pipeline aspect of the incentive package.

Capacity

MAPC is experienced at managing large federal scopes comparable in size and scope to this project. MAPC received and successfully managed a \$4M HUD grant under the FY2010 Sustainable Communities Regional Planning Grant program. Since that time, MAPC has been awarded large federal grants related to public health, emergency preparedness, economic development, and transportation. MAPC also is the designated Economic Development District for Greater Boston under the Federal Economic Development Administration and regularly coordinates to share and track federal grant opportunities through this program. MAPC's Finance, Legal, and Administrative teams are prepared to administer and track all necessary

reporting requirements of this grant program. MAPC is also currently in the process of creating a new position solely to manage administration of federal grants.

Beyond the financial and administrative management of the grant reporting requirements, MAPC's housing team, and specifically the Manager of Housing and Neighborhood Development, has expertise in project management and will lead implementation of the proposed activities, managing the day-to-day work and partner communications. The Manager of Housing and Neighborhood Development will work closely with the entire MAPC housing team, which collectively has experience in federal grant project management, housing planning and policy development, land use regulations, long-range or comprehensive planning, public land disposition for affordable housing, architecture, urban design, development financing (both for-profit and non-profit), and community engagement. Several other MAPC departments will be part of the overall project team:

- MAPC's Land Use team – particularly the Economic Development Division – will be part of the MAPC project team and will work closely with the project manager on grant activities related to workforce development and facility siting.
- MAPC's Data Services team will coordinate data collection and analytical services to support research and planning activities.
- MAPC's Communications team will build a project webpage, project newsletter, and communication materials to share information with stakeholders and interested parties throughout the duration of the project.
- MAPC's Community Engagement team will play a significant role in crafting a community engagement plan, implementing strategies to engage different stakeholders, and evaluating how engagement is going throughout the process. Based on evaluation of engagement, the community engagement plan may evolve to ensure a variety of different perspectives are heard through the project.
- MAPC's Municipal Collaboration team oversees multiple collective purchasing and procurement programs and has extensive experience facilitating cross-jurisdictional agreements and will be available to advise throughout the project.

MAPC is equipped to carry out this project because MAPC is well-versed in convening a variety of stakeholders to research opportunities and chart paths to implementation. The funding provided by this grant to act as an incentive for a new facility(s) is an opportunity that many cities and towns individually would not be able to offer.

The success of the project does depend on cities and towns working together to assess and present a pipeline of projects to include in an incentive package for the NOFO and RFP. The proposal builds in significant amount of time for MAPC and partnering communities, along with partners at the state, to explore this idea and find different solutions that both 1) work for the participating cities and towns and 2) provide enough of an incentive to attract responses from developers.

Partner Capacity

Participating municipalities will be key partners in this work. As part of the Memorandum of Understanding, each participating jurisdiction will be responsible for identifying the relevant staff members with the needed skills and knowledge to advance this effort. This is presumed to include but is not limited to director-level decision makers, land use and development review

planners, inspection staff, GIS specialists, and data analysts. Our ability to successfully design an enticing solicitation to attract a manufacturer depends on the willingness of jurisdictions in our area to work with us to identify a pipeline of projects that could be committed to being produced using the selected manufacturer. We expect to execute a preliminary MOU at the outset of the project that may be modified following completion of our research activities (at which point each jurisdiction will have a clear sense of the projected pipeline of projects).

Massachusetts also has a strong network of housing partners at the state level who we plan to engage in this project. The Executive Office of Housing and Livable Communities, Massachusetts Housing Partnership, and MassHousing are just a few examples of allied organizations who bring housing development and economic development expertise. We anticipate their participation throughout the process, in various capacities from serving on the Working Group to participating in sub-group research activities.

Experience Coordinating Partners

As a regional planning agency, MAPC views regional collaboration and convening at the heart of its mission. MAPC works with municipal partners on local technical assistance projects – more than 100 projects are undertaken by the agency each year. MAPC also convenes subregional groups of municipal staff and officials on a regular basis to share best practices, challenges, and opportunities for collaboration. MAPC also manages several different coalitions of municipal, public, non-profit, and private partners to advocate for policy and legislative positions. An example of one such group is the Metro Mayors Coalition Housing Task Force, which is managed by the MAPC Housing Team (project manager of this grant).

Application Preparation

This application was prepared by a team of MAPC staff and City of Boston staff. The grant application project team included:

Metropolitan Area Planning Council – Staff
Marc Draisen, Executive Director
Lizzi Weyant, Deputy Executive Director
Andrea Harris-Long, AICP, Manager of Housing & Neighborhood Development
Sukanya Sharma, Regional Planner II
City of Boston – Staff
Mayor Michelle Wu
Sheila Dillon, Chief of Housing
Jessica Boatwright, Deputy Director of Neighborhood Housing Development Division
Paige Roosa, Director of the Mayor’s Housing Innovation Lab
Karina Oliver-Milchman, AICP Deputy Director of Policy Development and Research

The staff and decision makers from both organizations coordinated closely throughout the development of this grant proposal, and MAPC plans to continue working closely with City of Boston staff and leadership if the grant is awarded. The grant application writing process demonstrated an excellent partnership between these two organizations, as the PRO Housing grant preparation period was short and required much coordination and collaboration. MAPC

looks forward to bringing this team together and expanding to more partners to implement the grant activities successfully.

Experience with civil rights and fair housing issues

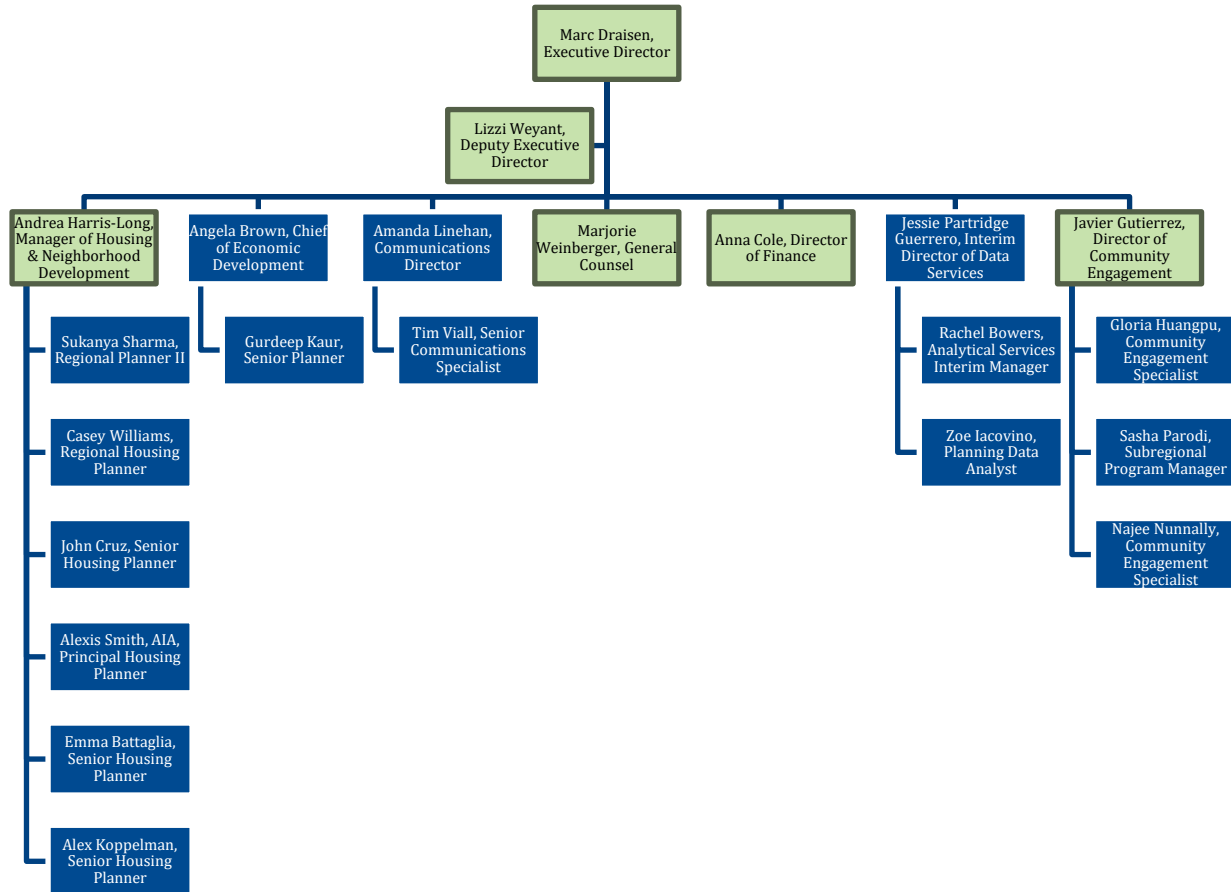
MAPC advocates for fair housing issues and supports the advancement of fair housing policy in a variety of ways in Greater Boston. MAPC sits on the Fair Housing Committee coordinated by Citizens' Housing and Planning Association (CHAPA), a leading housing advocate across the state of Massachusetts. CHAPA's Fair Housing Committee brings together groups like MAPC and other stakeholders from across the state to intentionally advance fair housing and serve as a place to share information, work on legislation, coordinate efforts, and educate ourselves.

MAPC also regularly works with data to analyze racial and economic disparities. MAPC's Housing Team regularly analyzes housing metrics by race and social categories to understand where disparities might exist. When identified, MAPC works with our municipal clients to help them create policy and programmatic recommendations to diminish racial and economic disparities. MAPC published a [State of Equity in Metro Boston report, with related Regional Indicators](#), in 2017 that analyzed racial and economic disparities and highlighted policy interventions needed to make the region more equitable.

Many cities and towns in Greater Boston recognize the vast racial and social disparities that exist in our region, and many have begun taking action to better understand and address these. For example, the City of Boston regularly compiles data to analyze racial and economic disparities to ensure compliance with policies designed to eliminate them, including the [Boston Resident Jobs Policy](#) and [Women and Minority Business Owned procurement requirements](#). The City of Boston's [Fair Housing Commission](#) enforces the City's Fair Housing Regulations. The following resources provide a few recent examples of resources produced by the Policy Development and Research team in the Boston Mayor's Office of Housing:

- Analysis of BIPOC Households by AMI:
https://docs.google.com/spreadsheets/d/1nK_erOBJCm-LUo7qxjPvwli1ACaPPd45eEmAM9e6pPI/edit?usp=sharing;
- Boston Housing Conditions Report:
<https://www.bostonplans.org/getattachment/066b23c5-cab9-4731-a338-f6e57e3ef55f>

Organizational Chart



The above organizational chart identifies the names and positions of key project team members for administering the grant activities. Positions in green boxes indicate key management roles. At least 21 full-time staff members will be working to implement or report/track grant activities at any given time during the grant period. At this time, there are no vacancies on the project team, nor are there any positions that are contingent on the award.

Experience Promoting Racial Equity

MAPC and partners have extensive experience working with underserved communities, particularly Black and Brown communities. MAPC’s Equity Team, a core group of individuals from across various departments, works across the agency to operationalize equity in project work. This framework will be applied to the grant activities. MAPC’s Community Engagement team is also nationally recognized for applying innovative techniques to engage hard to reach

communities. Their involvement in Activity 7 and throughout the project will ensure that project elements and engagement are designed to advance racial equity and are inclusive and equitable.

Leverage

At this time, no formal commitments have been leveraged for this application. However, the proposal expects that participating municipalities will leverage resources against the grant funds to provide the development pipeline aspect of the solicitation. These leveraged resources may take the form of monetary commitments, publicly-owned land, waived fees, or other benefits. Activity 2 includes an in-depth process to review resources available to cities and towns and tradeoffs for different methods of providing a development pipeline.

Long-Term Effects and Outcomes

This project presents an immense opportunity for Greater Boston to expand the local construction industry and embrace alternative construction technologies that can complement onsite construction methods to meet housing and climate goals in a more timely and cost-efficient manner. If awarded, this project will set Greater Boston on a new trajectory, with labor organizations at the table, to collectively find ways to allow onsite construction methods to continue while also making room for different options, particularly in neighborhoods where infill development and smaller-scale housing options are better suited for offsite methods and less appealing for traditional contractors. We see a variety of permanent, long-term effects and outcomes beyond the grant period ending in 2030. If successful, we will have greatly reduced key barriers to producing and preserving affordable housing and have measurable outcomes to show HUD and other regions across the nation.

Upon completion of the grant-funded activities, we hope to be the first metropolitan planning agency to successfully execute a coordinated strategy working across municipal boundaries to pool production demand for an offsite construction manufacturing facility to serve our region’s desperate need for the rapid production of high-quality affordable housing units.

Deliverables

Deliverables associated with each activity anticipated to take place during the grant period are described below:

Activity	Anticipated Deliverables*
1	Working Group Objectives, Agendas, and Meeting Schedule; Memorandums of Understanding; Partner Agreements
2	Four research reports on the following topics: Addressing regulatory barriers to offsite construction in participating municipalities; Generating a project pipeline to support a regional manufacturing facility; Creating workforce development opportunities; and Identifying suitable sites in the region for a manufacturing facility or facilities Amended MOUs, if necessary Webinars or other communication materials to share research findings with broader network of housing professionals
3	Solicitation for manufacturing facility, including incentive package

4	Scoring rubric for selection committee; developer selection notification memorandum; developer designation memorandum; letter committing funds for the construction of the facility
5	Plan detailing the order in which development projects will be submitted for manufacturing (informed by Activity 2 deliverables)
6	Development progress reports; permits and certification of occupancy for manufacturing facility
7	Focus group/interview protocols; communication materials include project webpage, project newsletter, one-pagers, social media assets; public campaign for educating about alternative construction technologies

*Additional deliverables will likely result as work gets underway. This outlines the bare minimum, and in the case of engagement/communication materials, a sampling of what may result. Throughout the project, we hope to share information about research findings and project milestones, to serve as resources for HUD and others in the housing field across the country.

Potential roadblocks

We recognize that, throughout the nation, opposition to modular housing often includes concerns of residents (quality/aesthetic concerns) and the construction trades (job loss/job quality concerns). Of course, these concerns may challenge the success of our proposal, but it is also our responsibility and intent to listen to these concerns carefully and to make sure all legitimate concerns are addressed. In our preliminary research into offsite construction methods as part of the process of preparing this grant proposal, we started engaging members of the construction trades. Our proposal seeks to address their concerns, in part, by focusing on infill housing development projects, which tend to be of a scale that would not compete with projects in which construction trades are typically involved. We also hope to have continued engagement with labor representatives as we see offsite construction methods complementing their work rather than replacing it. MAPC and its partner municipalities would not consider this project a success if local jobs were lost – instead, we are committed to finding ways to increase the diversity of jobs in the construction field to attract more diverse workers with good jobs, pay, benefits, and worker protections. The project also includes a robust community engagement component to combat public perception against modular or prefabricated housing types.

Reducing housing cost burden

By accelerating the pace at which new affordable housing units can be constructed and placed in service, our proposal will increase the supply of affordable housing units in Greater Boston, reducing the exorbitant number of households that are currently housing cost-burdened. (In Boston alone, 40 percent of households are cost-burdened, and 20 percent of households are severely cost-burdened.¹⁹) Furthermore, with a focus on infill development, our strategy will allow us to densify housing in areas that are transit- and resource-rich, further decreasing costs of other necessary household expenses and providing access to jobs, schools, libraries, and other amenities that increase quality of life.

Providing a model for other communities

We are excited to put forth this proposal as a regional planning agency because the problems caused by a shortage of affordable housing units are not isolated to one city or town but constitute a regional challenge requiring regional solutions. The deference given to local municipalities to adopt their own land use and regulatory frameworks creates challenges to

¹⁹ American Community Survey, 2017-2021, Five-Year Estimates.

regional coordination and tackling regional problems such as the supply of affordable housing. Local governments are uniquely positioned to project future housing needs and a pipeline of projects to support the location of a nearby manufacturing facility. We hope that this proposal can serve as a model for regions across the country who face similar challenges to regional coordination and have an acute need for affordable housing.

Environmental Risks

As a coastal region, Greater Boston is more likely to be impacted by climate change through rising sea levels and severe weather events that cause flooding, extreme heat, and other natural disasters. MAPC regularly works with its 101 cities and towns to enact climate resiliency plans, hazard mitigation plans, and climate action plans (which include mitigation and adaptation strategies). Housing planning through Greater Boston takes into account our region's need to locate housing in areas with the least flooding risk and build more energy-efficient and resilient homes. These regional and local climate-related policies will be evaluated under Activity 2 and inform recommendations for potential modular developments and a manufacturing facility to maximize resiliency and energy efficiency.

Immediate Success

In the immediate term, success of our proposal will be a high-functioning, sustainable manufacturing facility that produces both high-quality, affordable housing units as well as safe and stable jobs for local residents.

Long-Term Effect on Removing Barriers to Affordable Housing Production

In the long-term, the success of our proposal will be a less severe affordable housing shortage and decreased societal ills that result from such a shortage. There will be a more balanced supply of housing units affordable to households at a range of income levels as a result of our increased capacity to produce these units (and revised regulatory frameworks mandating the placement of these units across cities and town due to the passage of progressive policies at the State and local level to mandate a more balanced supply of affordable housing throughout the region, and not in concentrated neighborhoods or cities and towns). Fewer households will be cost-burdened, and a smaller share of our housing units will be overcrowded. Cities and towns in our region will be less segregated, BIPOC households will have greater access to well-resourced areas to allow for advancement in educational attainment, unlocking better quality and higher-paying jobs, and narrowing the racial wealth gap. All of these effects will result in an increased quality of life for residents in our region.

Secondary to accelerating the pace of construction of new affordable housing units to address an immediate need for more affordable housing units in well-resourced areas of our region, our proposal also seeks to further innovate in the building technology space. The Boston metropolitan area has long been a leader in the advancement of technology and research, due in large part to the concentration of the country's top academic institutions and associated research labs. There is tremendous opportunity for innovation in the offsite construction space in collaboration with colleges and universities in the region. This innovation will be complemented by progressive and high expectations for the types of jobs that result from new and emerging technologies.