

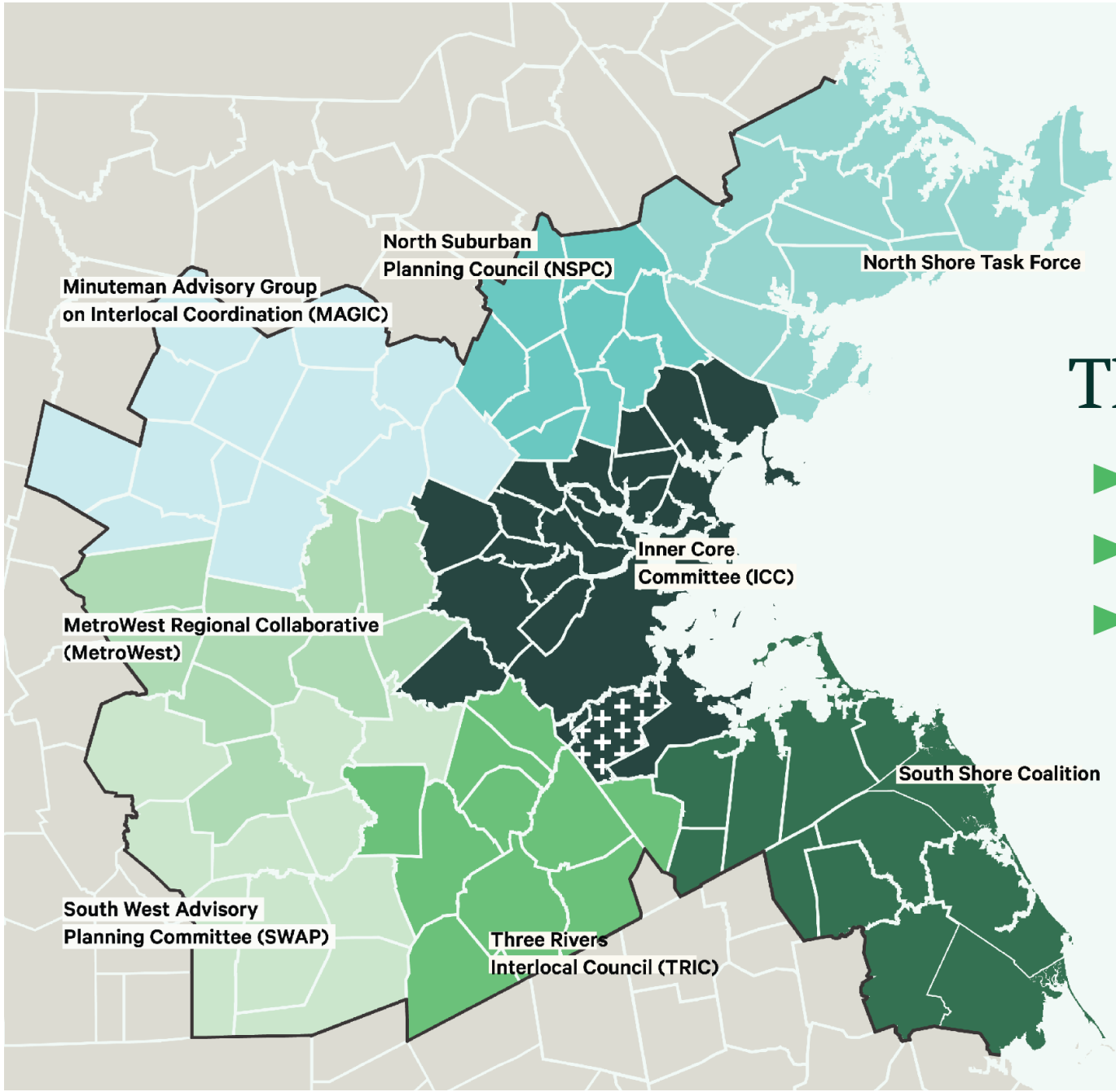


MAPC's HUD PRO Housing Grant

Greater Boston Regional Offsite Construction Strategy



Greater Boston ROCS



The MAPC Region

- ▶ 101 cities & towns
- ▶ 8 subregions
- ▶ 3.4 million residents

What is offsite construction?

- Offsite construction is “the process of planning, designing, fabricating, transporting, and assembling **building elements** in a **factory setting for rapid onsite assembly** to a greater degree of finish than in traditional piecemeal onsite construction.”
- It encompasses a wide range of building materials, project scales, and integrated systems – supporting varying degrees of prefabrication, from simple kit-of-parts assemblies (1D), to **2D panel systems**, to **highly integrated volumetric modules (3D)**.

2D Panel Systems



3D Volumetric Modular Systems



Barriers to Offsite Construction in MA

Barrier #1: No in-state manufacturing capacity

- At the time of the application, no mid- or large-scale offsite facility in MA
- Projects rely on out-of-state factories, increasing logistics and transportation costs and risk

Barrier #2: Regulatory differences across many local jurisdictions

- Many municipalities do not have clear regulatory guidelines for modular housing development, and most dimensional requirements present challenges to modular typologies (i.e. height)
- Variation across jurisdictions presents barriers for pre-design, standardization, and efficiency

Barrier #3: Lack of a development pipeline or aggregated demand

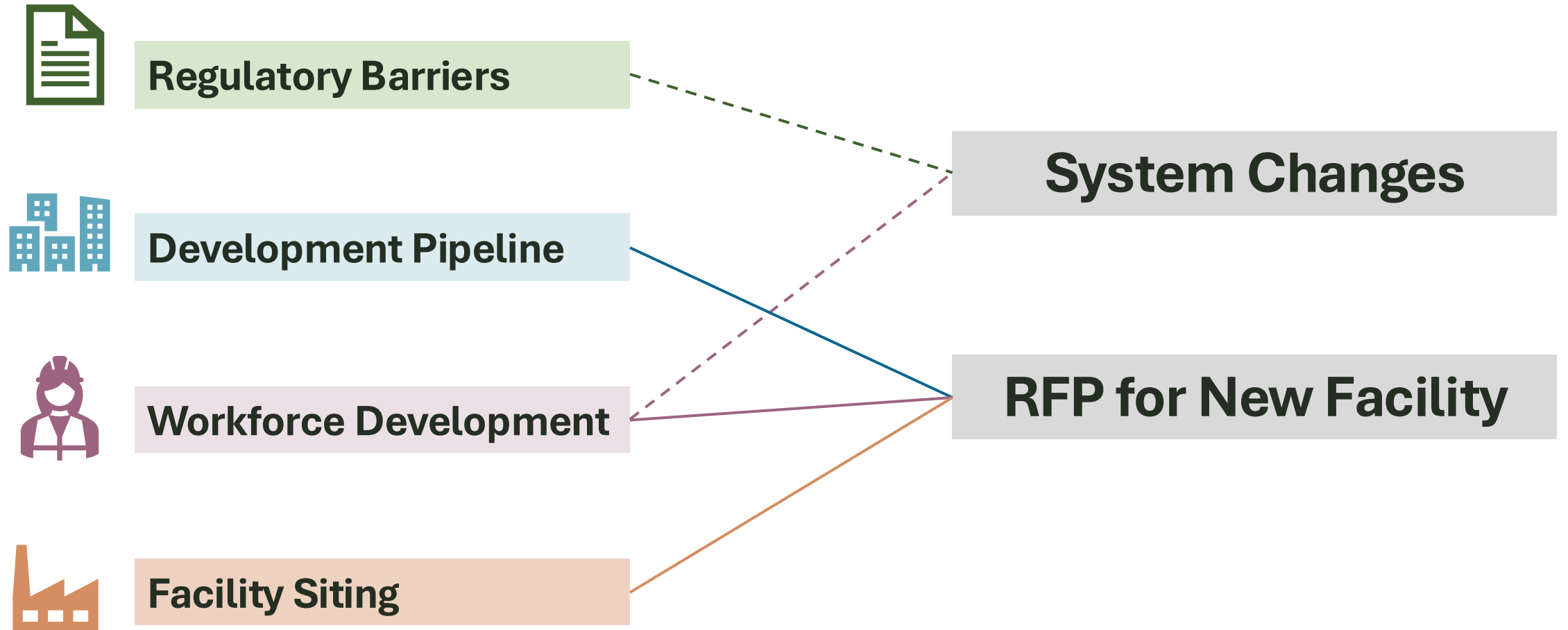
- Housing demand is fragmented across jurisdictions and project types
- Lack of coordinated, multi-year demand discourages manufacturing investment

Barrier #4: Labor apprehension and opposition

- Concerns about impacts on union and on-site construction jobs
- Need clearer pathways for modular to complement the existing workforce



Regional Strategy

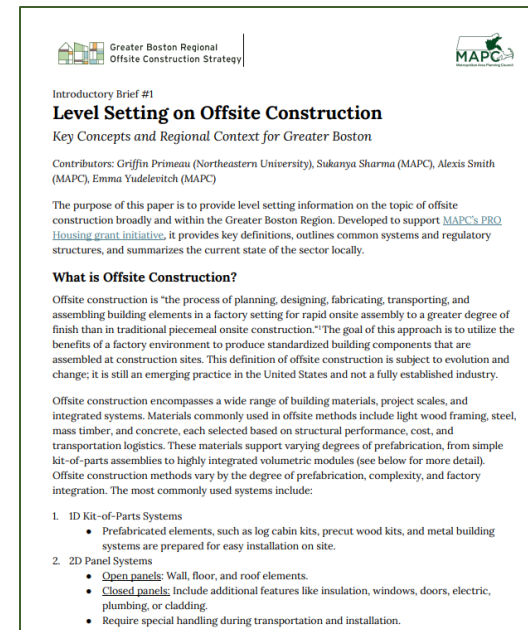
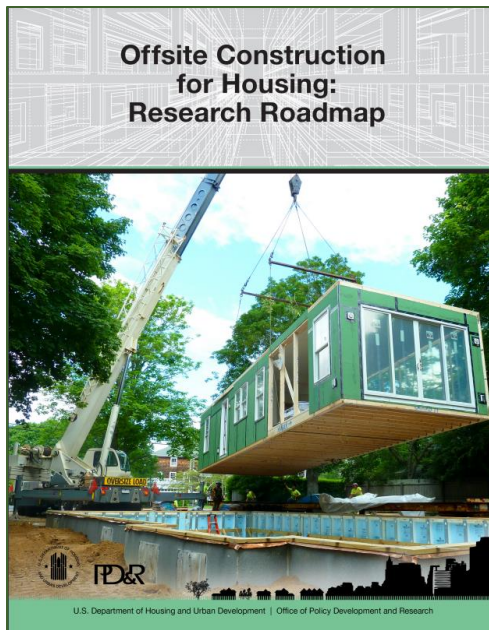


Greater Boston ROCS Overview

In October 2024, MAPC was awarded **\$3M HUD PRO Housing grant (2024-2029)** to create a regional strategy that addresses barriers and opportunities to offsite construction in Greater Boston, ultimately leading to issuing an RFP for a new offsite construction facility in the region.

Foundational research:

- [HUD Offsite Construction for Housing Research Roadmap](#)
- [City of Boston Housing Innovation Lab](#)
- [MAPC Level-Setting White Paper](#)



GB ROCS Activities and Outcomes

Project Activities

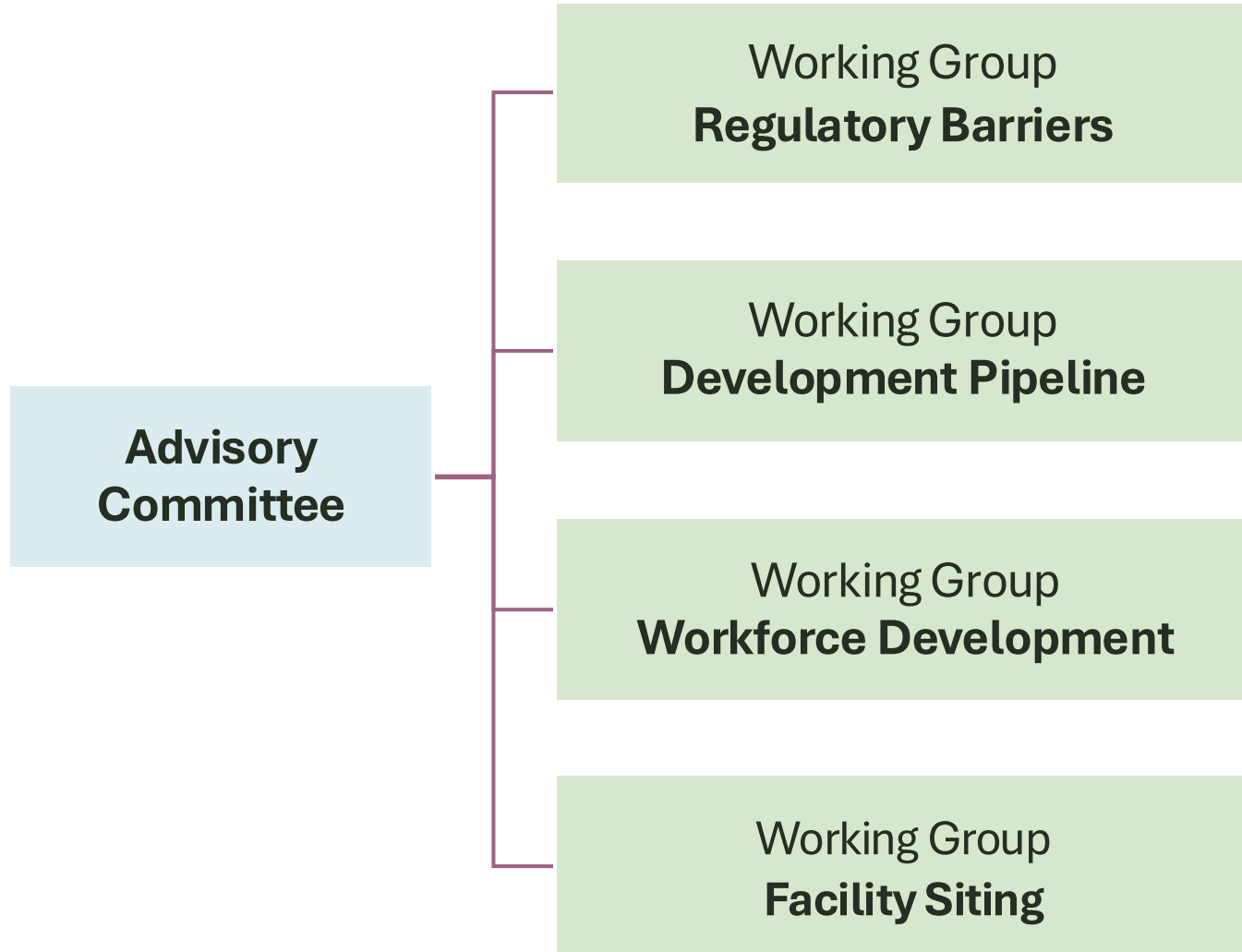
- Research & planning
 - Regulatory review
 - Pipeline development
 - Workforce strategy
 - Facility siting
- Community engagement
- Facility solicitation

Project Outcomes

- Research briefs, including policy recommendations
 - **MOUs with participating municipalities and MAPC**
 - **Facility solicitation & pre-development support**
 - Broader systemic changes
- **\$800k - research and technical assistance**
 - **\$2.2M - dedicated to facility(s) siting support**



GB ROCS Structure



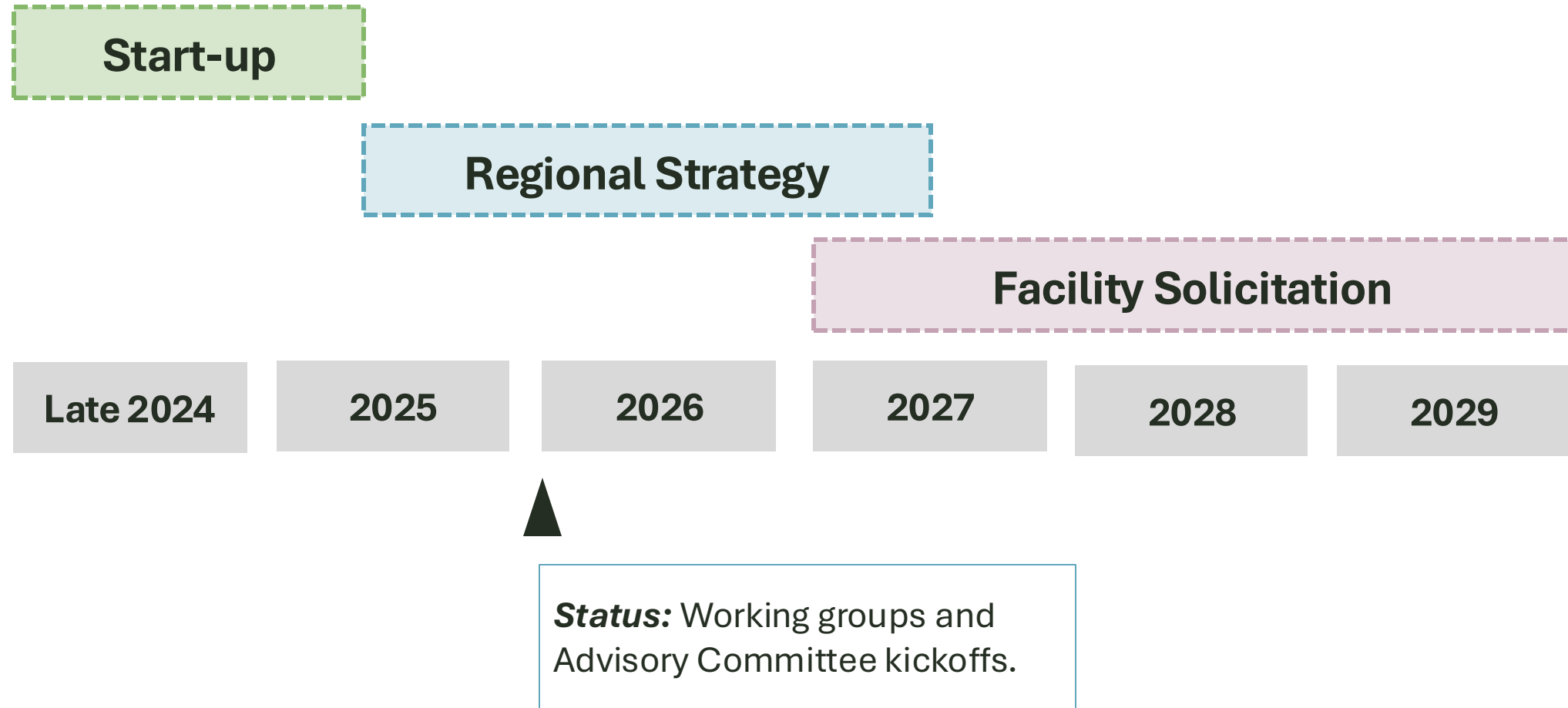
Subject Matter Experts

Working Group Outcomes

- Research briefs & policy recommendations
- Inform the MOUs and the solicitation process



GB ROCS Timeline



Project Partners

Municipalities

1. Arlington
2. Boston
3. Cambridge
4. Chelsea
5. Everett
6. Malden
7. Newton
8. Revere
9. Somerville*

- Municipal partners, many of whom overlap with the MMC Housing Taskforce communities, have **signed individual MOUs for this grant**, signaling a good-faith commitment to participate in the work and to explore the recommendations that emerge from the research.
- As the project progresses, **we anticipate amending these MOUs to identify more specific commitments** that municipalities can make based on their local conditions, capacity, and readiness.

**Participating, MOU pending*



Project Partners

State Partners

- Mass Housing Partnership (MHP)
- Executive Office of Housing and Livable Communities (EOHLC)
- Executive Office of Economic Development (EOED)
- Massachusetts Clean Energy Center (MassCEC)
- MA Association of Community Development Corporations (MACDC)
- MassDevelopment
- MassHousing*

Subject Matter Experts

- MOD X Research Consortium
- Boston Society for Architecture
- International Code Council
- MIT Center for Real Estate
- Modular / Offsite Businesses + Trade Associations + advocacy organizations
- MassEcon

And many more!

- Developers
- Manufactures – through structure engagement activities and factory tours
- Lenders
- Architects



Advisory Committee

Organization
City of Everett
City of Boston, Housing Innovation Lab (iLab)
City of Newton
City of Cambridge
Executive Office of Housing and Livable Communities (EOHLC)
Division of Standards
Executive Office of Economic Development (EOED)
MassDevelopment
LISC Massachusetts
Modular Building Institute (MBI)
Massachusetts Housing Partnership (MHP)
Fenway Forward (formerly Fenway CDC)
Urban Edge
NAIOP Commercial Real Estate Development Association



Working Group Partners

Regulatory Barriers

City of Boston, Inspectional Services

Town of Arlington, Inspectional Services

City of Revere

Cambridge Housing Authority

Greenstaxx

Eastern Bank

Union Studio Architecture & Community Design

AIA Massachusetts

EOHLC

MHP

Development Pipeline

City of Somerville

Town of Arlington

City of Newton

City of Cambridge

Massachusetts Housing & Shelter Alliance (MHSA)

Community Economic Development Assistance Corp (CEDAC)

Fenway Forward (formerly Fenway CDC)

Tocci Construction

Somerville Community Corporation

Eastern Bank

Workforce Development

City of Boston

City of Somerville

MassCEC

MassHire Metro North

Associated Builders and Contractor (ABC) - MA Chapter

Habitat for Humanity Greater Boston

Star Contracting Company

Goodwill Boston Career Center

Association for General Contractors

Facility Siting

City of Malden

City of Everett

City of Boston

City of Chelsea

MassDevelopment

MassEcon

CNU-New England

MIT - Real Estate Transformation Lab

POAH



Working Groups



Regulatory Barriers

How should **local, regional, and state agencies reform regulations** to allow for more modular development in the Greater Boston area?



Development Pipeline

How can the region **demonstrate that there is robust and consistent demand** for small-scale/ **missing middle scale** residential development suited for modular construction?



Workforce Development

What workforce **development practices offer high quality jobs while enabling lower-cost modular construction?**



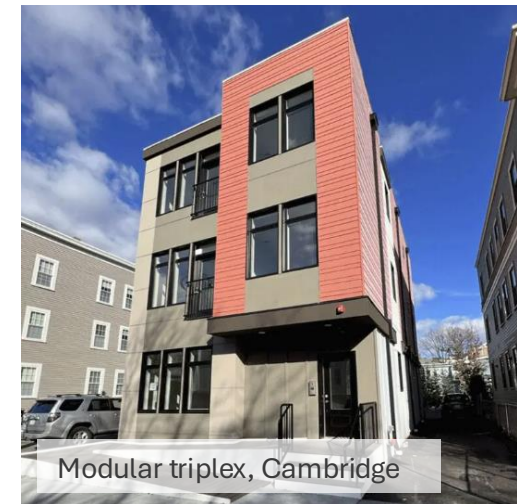
Facility Siting

How can we **identify suitably sized parcels or areas** in the region that could accommodate a modular housing factory? **What predevelopment needs could be supported** through the grant?



Focus on small-scale infill housing

- For this grant, the focus is on small-scale infill housing (aka missing middle housing)
 - ADU, duplex, townhomes, triplex, fourplex, sixplex, small multifamily under ~20 units.
- Given its various benefits, modular construction can be a supplemental construction type to help meet housing production goals and add missing middle housing more efficiently to existing neighborhoods.



Demand Aggregation Needs

- Offsite construction landscape in the region is nascent
- **To operate viably, especially in early years, mid- to large-scale manufacturers require a predictable & healthy volume of housing projects.**
- For the solicitation process, we want to demonstrate that there is demand across the region for modular housing.
- There is also a need to coordinate with municipalities and housing ecosystem partners to support development of a pipeline of modular projects.

→ **Regionally coordinated, multi-year project pipeline**

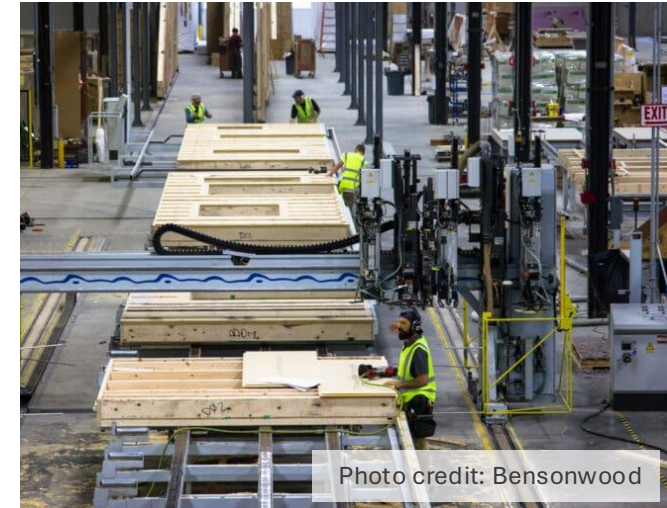


Photo credit: Bensonwood

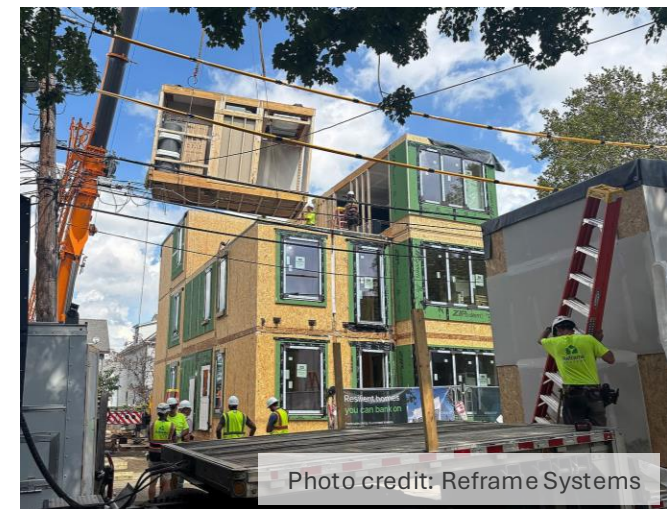


Photo credit: Reframe Systems

Highlights – Regulatory Barriers

Modular homes in MA, especially 3D volumetric are **regulated at both state and local level**. While the state oversees the off-site manufacturing process, local building officials remain responsible for inspecting on-site elements such as foundations and utility connections.

Local agencies also ensure that installation complies with all applicable zoning requirements and local building codes.

A part of the research is, therefore, tackling the question:

How should local, regional, and state agencies reform regulations to allow for more modular development in the Greater Boston area?

- Understand the capacity needs at state level
- Examine local zoning and building codes, inspectional practices that may hamper offsite construction
- Ultimately, amend MOUs with municipalities to make changes



Key State Regulatory Touchpoints:

- Building Code (780 CMR) and Manufactured Building Program (780 CMR 110.R3)
- Commercial Trucking Regulations (MGL Chapter 85, MGL Chapter 90, 700 CMR 7.00 and 8.00)
- Fire Code (527 CMR 1.00)
- Environmental Code (310 CMR)
- Building Energy Codes: Base Code (780 CMR 11R), Opt-In Stretch Code, and Opt-In Specialized Code (225 CMR 22)
- Architectural Access Board (521 CMR)



Regulatory Barriers Literature Review Preliminary Takeaways

Key Local Regulatory Touchpoints:

- Zoning regulations enforced by local planning boards and ZBAs (site plan review, design review, discretionary approvals)
- Interpretation and enforcement of state codes (building, fire, energy, etc.)
- Local regulations and related permits for crane operations, street closures, police details, etc.
- Enhanced environmental regulations (septic, wetlands, etc.)
- Requirements for local historic districts

What other touchpoints should we consider?



Regulatory Barriers Literature Review Preliminary Takeaways

Zoning and Permitting Barriers:

- Regulatory environment in Massachusetts characterized as broadly burdensome (bureaucratic complexity and the cumulative impact of overlapping rules and standards)
- Friction between state-level modular approvals and local zoning and permitting
- Most issues emerge at the local level with uninformed boards and a patchwork of regulations across the state
- Inconsistencies and lack of streamlined pathways (much more efficient when local jurisdictions adopt their respective state code)
- Zoning that doesn't distinguish between modular and HUD Code manufactured housing or mobile homes



Regulatory Barriers Literature Review Preliminary Takeaways

Inspections and Regulatory Complexity:

- Two-step approval (factory and onsite) creates duplicative inspections and can lead to scope delineations between what is inspected in the factory by third-party inspectors and what is inspected onsite
- Local inspectors often don't understand modular methods, even with state-approved plans
- Local authorities often override state-approved plans
- National uniform codes not adopted in Massachusetts
- Lack of inspector training

Example: ~200+ day permitting process for the Cross Triple Decker in Somerville, built by modular manufacturer Reframe Systems



Literature Review Preliminary Takeaways

Financial Challenges:

- Lack of alignment between offsite construction and existing financial systems, where financing is #1 bottleneck
- Lenders struggle to underwrite projects with industrial construction (IC) timelines and risks
- Typical jurisdictions require permitting of offsite components as if they were built on site, which financing doesn't account for
- Appraisals often undervalue IC benefits, and banks resist funding manufacturing aspects
- Insurance challenges for developers and site owners because some insurers will not cover the modules until they are installed



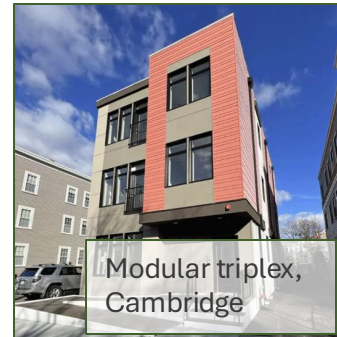
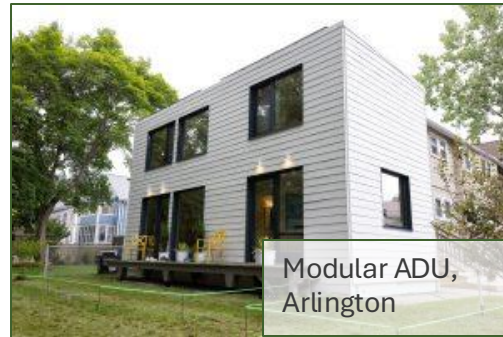
Highlights – Development Pipeline

We are focusing on the **small-scale infill housing (aka missing middle housing)**. We see a lot of opportunity and strategic advantage of offsite filling that gap.

A part of the research is, therefore, tackling the question:

How can the Greater Boston region demonstrate that there is robust and consistent demand for small-scale residential development suited for modular construction? Can we estimate this potential development pipeline in a quantitative way?

- Conduct quantitative and qualitative analysis
- Explore ways municipalities and identify pipeline – CPA funds, public land dispositions, model RFP etc.



Highlights – Workforce Development

Modular housing sits at the **intersection of construction and manufacturing**, and it's critical to recognize this distinction. Jobs in modular manufacturing can offer more predictable hours, fixed locations, less seasonal volatility, and greater access to wraparound supports, creating **new opportunities for underrepresented workers** such as women and people of color in the building trades. Labor and workforce concerns present a major barrier to modular adoption, particularly fears that offsite construction could displace union jobs.

A part of the research is, therefore, tackling the question:

What workforce development practices offer high quality jobs while enabling lower-cost modular construction?

- Conduct case study research on fair labor agreements examples
- Understand which specialized skills and certifications are needed in the modular construction supply chain
- Collaborate with partners including municipalities to identify models that work



Highlights – Facility Siting

The Facility Siting Working Group will focus on the physical, spatial, and locational side of **what it takes to host a modular production facility in Greater Boston**. We will not select or commit to any specific site, but we **will assess whether the region has enough suitable land clusters and identify what conditions could make a facility easier to establish**. This suitability analysis will consider factors such as factory footprint, access to transportation routes, zoning readiness, and community support for hosting such a facility.

A part of the research is, therefore, tackling the question:

How can we identify suitably sized parcels or areas in the region that could accommodate a modular housing factory, and determine what predevelopment needs they might have that could be supported through the grant?

- Conduct a suitability analysis
- Engage with manufactures and developers through focus groups and Request for Information (RFIs)



Stay Connected!

Contact Us

Do you have questions? Looking for more information?
Please don't hesitate to contact us at HUD-GBROCS@mapc.org

Stay updated with the project newsletter

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Learn more of the project website

<https://www.mapc.org/resource-library/housing-offsite-construction-strategy/>

