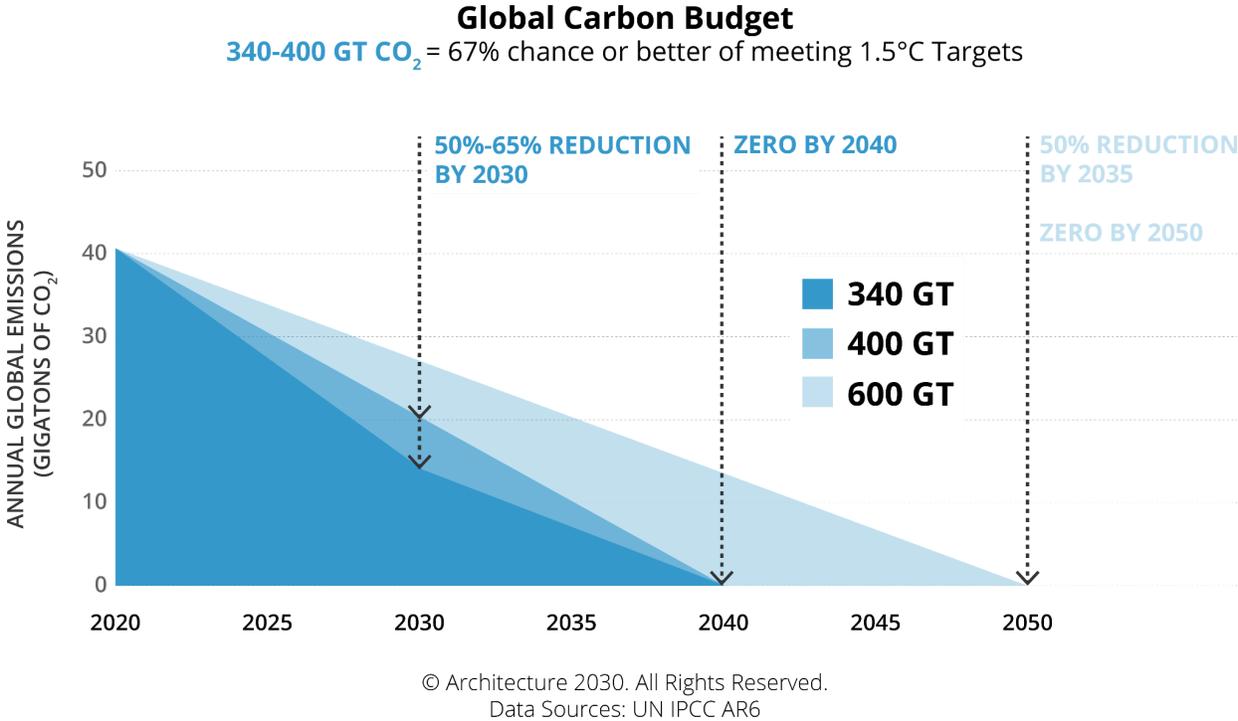


Boston Zero Net Carbon Building Zoning Embodied Carbon Technical Advisory Group DRAFT Report and Recommendations

INTRODUCTION

The Urgency Behind Reducing Embodied Carbon

The 2015 Paris Agreement established the goal of keeping planetary warming to below 2°C while pursuing efforts to limit warming to 1.5°C. The world is quickly depleting its 1.5°C carbon budget. According to the IPCC’s sixth assessment report, as of January 1, 2020, the remaining global carbon budget for a good probability (67% chance or better) of avoiding more than 1.5°C warming is 340-400 Gt CO₂ (AR6 budget). To meet this budget CO₂ emissions must be reduced 50% to 65% by 2030 and to zero CO₂ emissions by 2040:

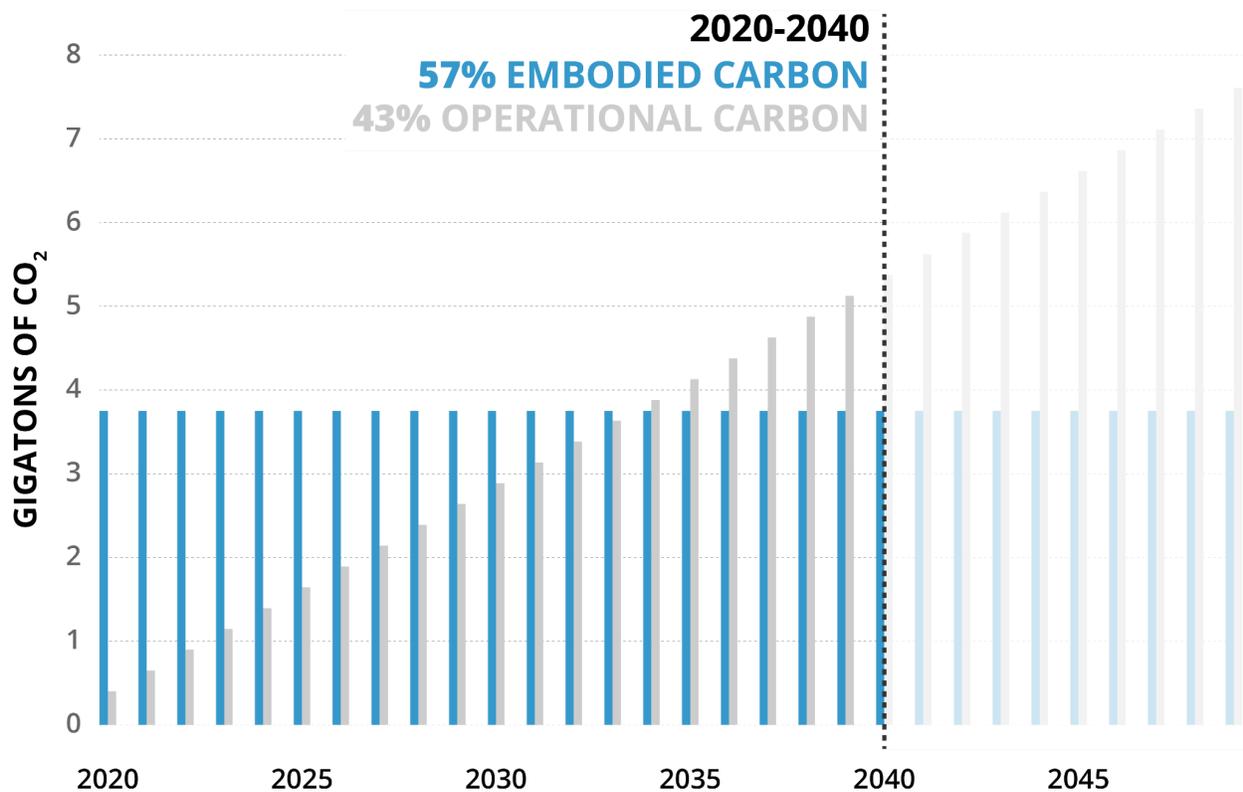


We are currently in the midst of the largest wave of urban growth in human history. In order to accommodate this growth, we expect to add 2.4 trillion ft² of new floor

area to the global building stock by 2060, effectively *doubling the current global building floor area*. Most of this growth will occur in cities.

When we look at all the new construction projected to take place between now and the target year of 2040, we see the critical role embodied carbon plays:

Total Carbon Emissions of **Global New Construction** *with no building sector interventions*



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Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017

Without interventions, by 2040 embodied carbon will be responsible for a larger proportion - nearly 60% - of global new construction emissions than operational carbon. And unlike operational carbon emissions, which can be reduced over time with building energy upgrades and the use of renewable energy, embodied carbon

emissions are locked in place as soon as a building is built. It is critical that the building design and construction community act now and pursue all opportunities to reduce embodied carbon and that we achieve zero emissions by 2040.

Definitions of Embodied & Operational Carbon

Embodied Carbon refers to the greenhouse gas emissions arising from the manufacturing, transportation, installation, maintenance, and disposal of building materials. Upfront embodied carbon (also known as upfront carbon) refers to the greenhouse gas emissions released before a building or infrastructure starts being used. This is particularly important for reaching GHG targets for 2030 because these emissions will be “frontloaded” in the next ten years, unlike annual operating emissions or end-of-life emissions, which will occur later and/or gradually over time.

Operational Carbon refers to the carbon emitted during the in-use phase of a building and includes the energy sources to power, light, heat and cool the building.

Total Carbon or whole life carbon of a building is the sum of both embodied and operational carbon. To reach net zero total carbon or whole life carbon, a building must minimize both the operational and embodied carbon over the building’s life cycle and offset any remaining carbon to reach zero.

Achieve Zero Embodied Emissions

What does ‘zero’ mean for embodied carbon? There are a few ways to think about net zero for embodied carbon, depending on what life cycle stages are included. A net zero embodied carbon building is one where the sum total of greenhouse gas (GHG) emissions and removals over its life cycle (from cradle to grave¹) are significantly minimized, meet local carbon emissions targets (e.g. kg CO₂e/sf-yr), and with additional ‘offsets’, equal zero.² Due to the urgency of meeting climate change

¹ Modules A1-A5, B1-B5 and C1-C4

² WLCN, RIBA, LETI (2021). *Improving Consistency in Whole Life Carbon Assessment and Reporting: Carbon Definitions for the Built Environment, Buildings and Infrastructure*. Accessed at: https://b80d7a04-1c28-45e2-b904-e0715cface93.filesusr.com/ugd/252d09_879cb72cebea4587aa860b05e187a32a.pdf

targets, focusing on upfront carbon can be helpful for focusing on the most urgent emissions. A net zero *upfront* carbon building is one where the sum total of GHG emissions, excluding 'carbon sequestration', from Modules A1-A5 is minimized, meets local carbon targets (e.g.kgCO₂e/m²), and with additional 'offsets', equals zero.³

Where local carbon targets have not been set, this means that a net zero embodied carbon building has adopted all available strategies to minimize embodied carbon across the life cycle and offset its remaining footprint.

Global organizations have set the following embodied carbon reductions targets to indicate which reductions need to be made on projects to reach net-zero:

- Architecture 2030: 45% by 2025, 65% by 2030, and net-zero by 2040;⁴
- LETI: 40% by 2025, 60% by 2030;⁵
- C40: 30% by 2025, 50% by 2030;⁶
- WGBC: 40% by 2030, net-zero by 2050.⁷

What are the strategies for minimizing embodied carbon? Broadly, there are four categories of strategies for reducing embodied carbon:

- **Build less, reuse more** through extending the life of existing buildings and reducing minimum floor area;
- **Design lighter and smarter buildings** that increase structural and material efficiency and reuse existing materials;
- **Replace high-carbon materials with low-carbon ones**, through evaluating the carbon footprint of different systems and assemblies during design and selecting carbon-storing materials where possible; and

³ WLCN, RIBA, LETI (2021). *Improving Consistency in Whole Life Carbon Assessment and Reporting: Carbon Definitions for the Built Environment, Buildings and Infrastructure*. Accessed at: https://b80d7a04-1c28-45e2-b904-e0715cface93.filesusr.com/ugd/252d09_879cb72cebea4587aa860b05e187a32a.pdf

⁴ Architecture 2030. (n.d.). *2030 Challenge for Embodied Carbon*. Retrieved August 2021 from https://architecture2030.org/2030_challenges/embodied/

⁵ London Energy Transformation Initiative (LETI). (2020). *LETI Embodied Carbon Primer*. <https://www.leti.london/ecp>

⁶ C40 Cities. (n.d.). *Clean Construction Declaration*. Retrieved August 2021 from <https://www.c40.org/clean-construction-declaration>

⁷ World Green Building Council (WGBC). (2019). *Bringing Embodied Carbon Upfront*. <https://worldgbc.org/news-media/bringing-embodied-carbon-upfront>

- **Optimize materials and procurement** by sourcing the product with the lowest carbon product available that meets a project’s specifications.

Additionally, there are process strategies that are key to achieving reductions on projects, including:

- **Use of life cycle assessment tools** to measure building embodied carbon and track reductions;
- **Collaboration** across project teams between architects, engineers, owners, builders, and suppliers is critical to success.

RECOMMENDATIONS

Overview / introduction

Led by the Embodied Carbon Working Group, the Zero Net Carbon (ZNC) Embodied Carbon Technical Advisory Group (TAG) reviewed and considered a wide range of policies, practices, and research to best understand built environment practices and strategies for reducing the carbon emissions associated with building and infrastructure construction materials. The TAG has organized recommendations under the following framework:

- Policy, Practice, and Awareness - recommendations are NOT limited to zoning and may impact one, two, or, ideally, all three impact areas.
- Immediate, Near-Term, and Long Term - recommendations should be prioritized for carbon reduction impact and feasible implementation.
- Action Oriented - recommendations should be task specific and, wherever possible, identify potential partners, resources and precedents.

POLICY	PRACTICE	AWARENESS
[01] Climate Action Plan: Update with embodied carbon goals and strategies	[06] Pilot Programs / Demonstration Projects	[9] Recognition for Best Practices

1. Building reuse and deconstruction ordinance	7. Incentives	10. City Capacity and Expertise
3. Require LEED embodied carbon-related/LCA Credits	8. BPDA Advisory Group	11. Workforce Development
4. Require whole-building LCA in zoning/permitting process		12. AEC Industry Resources
5. Municipal & State collaboration		

1. Include Zero Net Embodied Carbon in the Climate Action Plan Update

Include goals and strategies for reducing embodied carbon in the built environment and establishing a Zero Net Embodied Carbon Standard for all new construction.

For Boston to meet our carbon neutral goals reducing construction embodied carbon emissions, currently 23% of our annual global GHG emissions, is critical. Boston’s Climate Action Plan (CAP), which has been updated on a regular basis, provides the City with a framework defining and prioritizing City. Developed in partnership with Boston’s residents and stakeholders, the CAP communicates the City’s policy goals and expectations. Action item #3 of the Climate Action Plan 2019 Update set in motion this Zero Net Carbon Building Zoning Initiative.

Goals: Implement a comprehensive embodied carbon reduction strategy that takes advantage of complementary policy pathways and includes strategies specific to building materials, products, building waste and material recovery, local production, transportation, and consumption emissions (e.g. Building disclosure, targets & thresholds, data collection & re-evaluation).

Action: Include embodied carbon reduction goals and strategies, including implementation of a zero net embodied carbon standard, in the next climate action plan update.

Timing/Sequencing: pending determination of the City’s next Climate Action Plan Update schedule. [City of Boston Climate Action Plan 2019 Update](#)

Precedents (CAPs with embodied carbon):

- [Albany 2019 Climate Action and Adaptation Plan](#)
- [City of Austin Climate Equity Action Plan](#)
- [Eugene Community Climate Action Plan](#)
- [King County 2020 Strategic Climate Action Plan](#)
- [L.A. Green New Deal Sustainable City pLAn](#)
- [Oakland 2030 Equitable Climate Action Plan](#)
- [Phoenix Climate Action Plan](#)
- [San Francisco Climate Action Plan](#)
- [Vancouver Climate Emergency Action Plan](#)

2a. Promote Building Reuse

Reusing existing buildings rather than replacing them is one of the most effective methods of reducing embodied carbon because it avoids emissions resulting from the production and construction of new building elements.⁸ In particular, projects that are able to retain and reuse primary structural and enclosure components will yield the greatest embodied carbon savings because these two systems are typically the most carbon-intensive components within buildings. Reuse also minimizes the environmental and human health impacts of demolition and construction waste.

Building reuse also offers environmental and social co-benefits. For example, traditional building materials, like wood windows or masonry facades, are frequently able to be repaired over time rather than requiring periodic replacement, which further reduces embodied carbon over the building's life. See 2b for additional information.

Goal: Avoid embodied emissions of new materials by reusing existing buildings in part or in whole.

Goal: Reduce emissions and the local environmental and health impacts of construction waste.

⁸ "Bringing Embodied Carbon Upfront," World Green Building Council

Action (Immediate): Identify barriers to existing building reuse and support implementation of Zero Waste policy and ordinances.

Action (Immediate): Evaluate opportunities to coordinate with and support Article 85 or other city preservation requirements.

Action (Immediate/Mid-Term): Support workforce development to create a skilled labor force that is trained to retrofit existing and historic buildings to bring them into compliance with performance standards without damaging existing fabric or introducing risks for future damage.

Action (Mid-term): Include the upfront impacts of demolition in embodied carbon targets for proposed new construction. If an existing building or portion thereof is retained, treat the avoided carbon as a carbon credit or offset.

Precedents:

- [Los Angeles Adaptive Reuse Ordinance](#)
- [San Francisco Climate Action Plan](#) *(and other action plans - add some here?)*

2b. Promote Building Deconstruction and Material Salvaging

In cases where the entire building cannot be saved and reused, deconstruction and the reuse of building elements or materials is another path to reducing overall embodied carbon of the new project. The circular economy of manufacturing, using and then reusing (rather than demolishing and landfilling) building materials is emerging as an important aspect of reducing both carbon and waste in the City of Boston.

Goal: Avoid the embodied emissions of new materials by reusing existing building components and materials.

Goal: Reduce the emissions and the local environmental and health impacts of construction waste.

Goal: Foster circular economy in the local deconstruction market by utilizing reusable and recycled materials in new construction.

Action (Immediate): Participate in City of Boston's Deconstruction Pilot (in development), a [Zero Waste Boston](#) initiative.

Action (Immediate/Mid-Term): Support workforce development to create a

skilled labor force that can salvage and reinstall existing building components.

Action (Immediate/Mid-Term): Support city and private sector actions to foster an economy and market place for salvage and reuse.

Precedents:

- City of Boston Deconstruction Pilot (in development)
- [Portland Deconstruction of Buildings Law](#)
- [San Antonio Deconstruction and Salvage Initiative](#)
- [Pittsburgh Building Deconstruction Policy](#) (in development)
- Mass DEP: [RecyclingWorks Blog - Building up Deconstruction](#)
- Mass DEP: [Construction Waste Management Plan Template](#)
- [City of Houston Building Materials Reuse Warehouse](#)

3. Require achievement of embodied carbon related LEED Credits

The LEED Green Building Rating System has been an integral component of permitting in Boston since the adoption of Article 37 in 2007, requiring LEED 'Certifiability' for all projects undergoing Article 80B Large Project Review. Existing familiarity with the rating system provides an easy pathway into requiring specific LEED credits that address embodied carbon as part of a holistic approach to ensuring sustainable and resilient development projects.

Goal: Expand awareness and practice of embodied carbon reduction by utilizing known and already adopted rating systems. Utilize existing LEED credits based on practices and methodologies that have already been written and reviewed by the green building community.

Action (Immediate): Update Article 37 to require achievement of specific LEED Credits and associated points related to embodied carbon. Potential credits to be adopted are listed below.

LEED Credits related to embodied carbon:

3a. LEED Credit - Building Life-Cycle Impact Reduction, version 4.1

- Option 1. Building and Material Reuse - if applicable to the project
 - Path 1: Maintain Existing Structural Elements: Walls, Floors, Roofs, and

Envelope- (15%, 30%, 45%, 60%, 75%)

- Path 2: Maintain Interior Non structural Elements (30%)
- Option 2. Whole-Building Life Cycle Assessment - for all projects
 - Path 1- Conduct a life cycle assessment of the project's structure and enclosure (S+E) only
 - Path 2- LCA of S+E must demonstrate a 5% reduction compared with a baseline in 3 of 6 listed impact categories, **one of which must be global warming potential (i.e. embodied carbon)**
 - global warming potential (greenhouse gases), in kg CO₂e;
 - depletion of the stratospheric ozone layer, in kg CFC-11e;
 - acidification of land and water sources, in moles H⁺ or kg SO₂e;
 - eutrophication, in kg nitrogen eq or kg phosphate eq;
 - formation of tropospheric ozone, in kg NO_x, kg O₃ eq, or kg ethene; and
 - depletion of nonrenewable energy resources, in MJ using CML / depletion of fossil fuels in TRACI
 - Path 3- LCA of S+E must demonstrate a 10% reduction compared with a baseline in 3 of 6 listed impact categories, one of which must be global warming potential (i.e. embodied carbon)
 - Path 4- Meet requirements of Path 3 and incorporate reuse and/or salvage materials into the project's structure and enclosure for the proposed design. Demonstrate reductions compared with a baseline building of at least 20% reduction for global warming potential and demonstrate at least 10% reduction in two additional impact categories listed below

3b. LEED Credit - Building Product Disclosure and Optimization- EPD's, v4.1

- Option 1- Environmental Product Declaration
 - Use at least 20 different permanently installed products sourced from at least 5 different manufacturers that meet one of the

disclosure criteria (Disclosure only)

- Option 2. Embodied Carbon/LCA Optimization
 - Use products that have a compliant **embodied carbon optimization report or action plan** separate from the LCA or EPD. Use at least 5 permanently installed products sourced from at least 3 different manufacturers (Disclosure + Action Plan)

3c. LEED Credit - Building Product Disclosure and Optimization- Sourcing of Raw Materials, v4.1

- Use products sourced from at least three different manufacturers that meet at least one of the responsible sourcing and extraction criteria below for at least 15%, by cost, of the total value of permanently installed building products in the project.
 - Bio-based materials
 - FSC Wood products
 - Materials Reuse

3d. Pilot LEED Credit- Procurement of Low Carbon Construction Materials

- Step 1 - Building Embodied Carbon Intensity - Baseline Calculation:
 - Use materials embodied carbon intensity baselines (mECIb) published by the University of Washington/Carbon Leadership Forum or other approved data provider to *calculate the embodied carbon for materials used in the project.*
 - The following materials *must be included* if they are used on the project:
 - Concrete
 - Steel
 - Timber
 - Metal Framing
 - Glazing
 - Multiply the appropriate mECIb by the total quantity of each material used in the construction of the project.
- Step 2 - Building Embodied Carbon Intensity – Verified Reduction Calculation:
 - Utilizing a third party verified Environmental Product Declaration with applied UWCLF methodology, determine the actual material embodied carbon intensity (mECIa) for the materials used in the project.

- Points are awarded base on the reduction in bECIb and bECIa. as follows:
 - **Low range reduction (0-30%) - 1 Point**
 - **Mid-range reduction (30+%) - 2 Points**

4. Integrate Whole Building Life Cycle Assessment into Permitting Review

Measuring embodied carbon is key to tracking progress towards net zero and to evaluating the highest impact, most cost-effective solutions to reducing embodied carbon on a project. Embodied carbon is measured as global warming potential (GWP) using a methodology called life cycle assessment (LCA). A whole building LCA measures the environmental impacts of a building over its full life cycle, from raw material extraction through end-of-life and disposal.

Similar to the way that energy use is calculated on a per square foot basis to express the energy use intensity (EUI) of a building,⁹ the embodied carbon intensity of a building can be calculated using a whole building LCA to quantify the embodied carbon per floor area (kgCO₂e/sf).

LEED v4 (see recommendation 3), the Living Building Challenge, and the Zero Carbon Certification are examples of green building certifications that already require or reward points for performing a whole building LCA and measuring the embodied carbon intensity of a building. Many cities and countries outside of the United States are already moving towards requiring the disclosure of embodied carbon intensity of a building alongside its operational carbon or energy use intensity (see precedents below).

Goal (Short-Term): Build capacity of local practitioners to complete whole building life cycle assessments (LCA) and identify embodied carbon “hot spots” in their buildings.

Goal (Long-Term): Establish embodied carbon intensity benchmarks for different building types and set meaningful targets for reaching net zero embodied carbon over time.

Action (Immediate): Request a whole building LCA report (that aligns with the

⁹ https://www.energystar.gov/buildings/benchmark/understand_metrics/what_eui

LEED v4.1 Building life cycle impact reduction credit reporting requirements or similar) as part of project filings.

Action (Long-term): Require certain project types to meet local / regional building carbon intensity targets (e.g. kgCO₂e/sf for different building types).

Precedents:

- Netherlands [Building Decree 2012](#)
- City of [Vancouver \(B.C.\) Green Building Rezoning Requirements](#)
- [New London Plan](#)
- Copenhagen [Bæredygtighedsklassen](#) ("The Sustainability Class")
- Assessment System for Sustainable Building (BNB) National LCA requirement for German federal buildings

5. Municipal / State Policy Alignment and Collaboration

Municipal policies and programs focused on reducing embodied carbon are new, and the City of Boston can learn a lot from the successes and failures of approaches being tried in the region to help refine and develop the City of Boston's approach. By working together, education and other resources needed to assist the industry in reducing embodied carbon and meeting the City of Boston's goals can be shared, reducing the burden on the City of Boston. Additionally, alignment of approaches within the region will make it easier for building owners and professionals to understand, follow and comply with the City of Boston's programs and policies.

Goal: Ensure consistency and alignment of regulatory policies across jurisdictions

Goal: Unlock Boston Regional opportunities including:

- Shared material reuse markets.
- Shared education and training programs.
- Uniform policy approaches, reporting requirements, and practice requirements (as needed).

Action (Near-term): Establish partnerships with local organizations and municipalities and support regular convening of public officials and stakeholders

Precedents:

- [Zero Carbon Buildings - Municipal Summit](#) Built Environment Plus
- [Electric Futures - Practical Approach to Regulation and Implementation](#) - BSA
- Regional municipality collaboration: Bay Area Low Carbon Concrete Code Working Group (funded by the Bay Area Air Quality Management District)
- Metro Mayors Coalition (Boston)
- [Mass DEP Construction and Demo Working Group](#)
- [Carbon Leadership Forum \(CLF\) Boston](#) Reuse & Policy Groups

6. Pilot Programs / Demonstration Projects

Boston has a long history of effectively utilizing pilot programs, demonstration projects and similar partnership approaches to better understand and accelerate the adoption of new practices.

Goal: Rapidly advance specific low carbon building practices and policies and expand local expertise, businesses, and material / product supply.

Action (Immediate / Near-term): Identify strategic interventions and potential partners and resources to launch programs and initiatives.

Potential Focuses:

- Mass Timber Practices and Tall Wood Buildings
- Low Carbon Concrete
- Carbon-Storing Materials
- Deconstruction
- Material Salvage & Reuse

Precedents:

[Boston Mass Timber Acceleration Program](#)

7. Consider Incentives for Best / New Practices

Establishing incentives encourages innovation and early adoption of best practices. The City of Boston, in collaboration with neighboring municipalities and the State of Massachusetts, should consider a wide range of potential incentives that would support early adoption of the policies proposed in recommendations 1-5.

Examples of relevant incentives include:

- Density Bonus
- Expedited Permitting
- Reduced Permitting Fees
- Tax Credits for manufacturers who create EPD's
- Tax credits for projects that surpass minimum target reduction

Goal (Immediate): Increase speed of adoption of embodied carbon recommendations and policies and expand local expertise and practices.

Action (Immediate): Work with local and regional partners to identify potential resources and means to incentivise practices.

Action (Immediate/Near Term): Update City policies to incorporate potential structural (e.g. building height and density bonuses), regulatory, and financial incentives.

Precedents:

- [Somerville Zoning Ordinance](#)
- Newton Lower embodied carbon options for multifamily buildings
- City of Seattle [Priority Green Expedited and Green Building](#) incentive programs
- [Vancouver Green Building Rezoning Requirements](#)
- French [Énergie Positive et Réduction Carbone \(E+C-\)](#) pilot program

8. Establish Professional Expert Advisory Group

The architectural, engineering, construction and sustainability professional community have a long history of partnering with the City and assisting in policy development. The formulation and evolution of embodied carbon policies would

benefit from the expert guidance and support of an advisory group. The responsibility of the advisory group should include the following:

- Provide strategic direction on proposed policies
- Focus on the development and evolution of EC policies
- Track policy outcomes
- Readjust baselines and revise target reduction goals through cyclical reviews
- Curate a database of innovative projects and case studies
- Advise on pilot programs (recommendation 6) and Incentives (recommendation 7), Review outcomes, and develop policy strategies responding to regional market context

Goals (Immediate/Ongoing): Support ongoing City and BPDA embodied carbon policy and program development and assist with the implementation of new strategies and policies and including integration of Boston’s diversity equity and inclusion goals on the professional expert advisory group and with stakeholder engagement and policy actions.

Action (Immediate / Near-term): Work with local partners to establish a professional expert advisory body with defined purpose, engagement and work plan, and schedule.

Precedents:

- Article 80B Project Impact Advisory Groups
- Boston Civic Design Commission
- Green Ribbon Commission

9. Recognize Best / New Practices and Projects

Celebrating advances and innovations in low embodied carbon building design and construction can accelerate the adoption of new practices, technologies, and products. Best practice case studies, awards and related recognition events both recognize the efforts of practice leaders and illuminate new practices.

Goal: Raise awareness of local case studies and best practices.

Goal: Incentivize continued leadership and innovation.

Action (Immediate / Near and Long-term): Identify partners including the BE+,

BSA, and CLF, and resources to identify recognition programs and case studies.

Precedents:

- BE+ Green Building Showcase
- [NYSERDA Buildings of Excellence Competition](#)
- AIA COTE Top 10 Awards

10. City Capacity and Expertise - Training, Staffing, Management

The field of embodied carbon in building materials, in both research and practice, is evolving rapidly in alignment with the growing understanding of urgency around meeting our climate goals. Continuing education for city staff on LCA tools and practices, innovative lower carbon materials and products being developed, and other policy precedents being adopted nationally will be necessary to stay current and informed.

Goal: Increase city staff capacity to efficiently and professionally advance critical practices and manage review project processes pertaining to embodied carbon analysis.

Action (Immediate): Emphasize the importance of City staff and capacity to engage project planning teams and effectively and timely respond to project proposals and regulatory filings.

Action (Immediate): Develop a continuing education program and/or partner with organizations such as CLF, BE+ and others to provide resources and training to city staff.

Precedents:

- [Carbon Free Boston Report](#)

11. Workforce Development

Inherent in many of these low embodied carbon recommendations is the expansion of local manufacturing, processing, and resourcing of materials and products. Expansion of our local workforce and skill specialization will be essential to meeting the new business and employment opportunities that will arise with new practices.

Goal: Increase local workforce capacity to respond to new practices, work, and business opportunities to reduce embodied carbon in the built environment. Ensure opportunities are provided equitably and support Boston's diversity, equity and inclusion goals.

Action (Immediate / Near-term): Assess workforce capacity, opportunities, and needs.

Action (Immediate / Near-term): Identify resources and partners to provide and support workforce training programs.

Precedents:

- [Massachusetts Clean Energy Center \(MassCEC\)](#)
- [Boston Office of Workforce Development](#)

12. Architecture, Engineering and Construction Industry Professionals

Action to reduce embodied carbon requires collaboration across professions, sectors and regions. Partnering with existing networks focused on the reduction of embodied carbon and related sustainability education actions can build capacity across the industry to collaborate, expand knowledge, advance best practices and include low embodied carbon strategies and materials in building projects.

Goal: Increase resources and educational offerings for architecture, engineering and construction industry professionals to ensure consistency and ease.

Action (Immediate / Near-term): Identify collaboration and education opportunities and needs, potential resources and partner organizations to

provide and support collaboration and education offerings.

Precedents:

- [Carbon Leadership Forum \(CLF\) Boston Hub](#)
- [Built Environment Plus \(BE+\)](#)
- [Boston Society for Architecture](#)
- [Boston Green Ribbon Commission](#)

END