

BUCKHEAD EMBODIED CARBON ACTION PLAN



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GOALS

To create for Livable Buckhead and its stakeholders an understanding of embodied carbon in commercial development and provide a path towards an actionable reduction plan – leveraging Buckhead’s commitment to innovation and making its neighborhoods even more livable.

Vision Statement

A.

CREATE

UNDERSTANDING

B.

Why Buckhead?

**One of three core
districts along Atlanta's
Peachtree spine –
Buckhead is a hub for
innovation.**

Home to over 100,000 residents and the daily destination of over 170,000 individuals, Buckhead is firmly situated as Atlanta's key nexus of 'live, work, and play' amongst the city's three commercial nodes. It is home to Lenox Square, Phipps Plaza, an array of high-end shopping and hospitality destinations, and a core of Atlanta's trophy office and residential markets.

Buckhead sits firmly in the epicenter of Atlanta's real estate market. Over the past seven decades, it has been a magnet for corporate talent and residents alike seeking its rare offering of rich commercial nodes adjacent to Atlanta's most serene residential neighborhoods.

With the proliferation of the Atlanta Tech Village, Buckhead has cemented itself firmly as a hub for innovation – a community that champions entrepreneurial and creative spirit. Buckhead proudly calls itself an incubator of some of Atlanta's youngest and most valuable firms at the forefront of technological innovation.

Buckhead's building stock and commercial real estate practices are anticipated to mirror the innovative spirit of its residents. In doing so, the district has committed itself to the leading edge of commercial real estate sustainability initiatives. Its adoption of an embodied carbon action plan will make Buckhead the first of Atlanta's three commercial districts to do so. Buckhead's commitment to reducing embodied carbon in its built environment will firmly position the district as more than a hub for innovation and commerce – one that is also a national leader in meaningful sustainability practices.

Why Buckhead?

At the epicenter of Atlanta's real estate, Buckhead is committed to impactful development.

As presented below, the newly-proposed projects in Buckhead represent substantial increases to its existing building stock. It is an obvious and significant leader in reducing embodied carbon emissions.

Existing Development

- 6,600 hotel rooms
- Eight luxury hotels
- 25,000 apartment units
- 11,000 condo units
- 9M sf retail
- 23M sf office
- 300+ restaurants
- 70+ art galleries

Anticipated Development

- Office: 3.2M sf (14% increase)
- Retail: 437,000 sf (5% increase)
- Hotel: 1,500 rooms (24% increase)
- Residential: 6,000 units (17% increase)

Demographics

- Population: 102,593 (as of 2022); 53,900 households
- Jobs: 47,187 (~40%) of Atlanta's high-wage and professional jobs are in Buckhead

Economics

- \$1.6B in annual public revenues
- Total economic impact on Atlanta: \$38B and on Georgia: \$56.8B
- >60% of households earn \$100k+
- Median household income: \$123,756
- Average household income: \$193,060



Atlanta Financial - Tower Place 200 - 3344 - Buckhead MARTA



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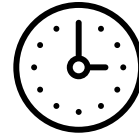
Modera Buckhead

Timeline

“Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

- Gro Harlem Brundtland.

Start

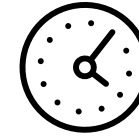


Near-Term

Awareness and Education

Engaged ULI Center for Leadership mTap to bring awareness of embodied carbon to Livable Buckhead's community

(Year 1 and 2)

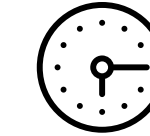


Short-Term

Continued Education and Advocacy, Establishing a Baseline

- Broaden stakeholder engagement through the Livable Buckhead Sustainability Committee
- Provide education for benchmarking materials and products
- Engage third-party consultant to establish a baseline measurement of embodied carbon for existing buildings in Buckhead
- Update DRC Sustainability Checklist to improve embodied carbon reduction practices

(Year 3 and 4)

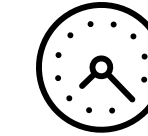


Mid-Term

Incorporation

- Create / promote award programs for projects with most impactful reduction measures
- Generate pilot development project
- Establish voluntary Life Cycle Assessment reporting program
- Implement yearly ECAP updates
- Recommend list of alternative materials that minimize embodied carbon emissions

(Year 5+)



Long-Term

Policy

- Socialize the impact by incorporating into SPI-9 and SPI-12 (City of Atlanta zoning and building code revisions, incentives)
- Update Buckhead Strategic Sustainability Action Plan to incorporate embodied carbon goals
- Align with Central Atlanta Progress (CAP) and Midtown Alliance

2

EDUCATION



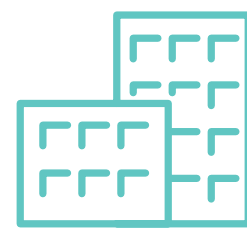
Embodied Carbon 101

- What is embodied carbon?
-



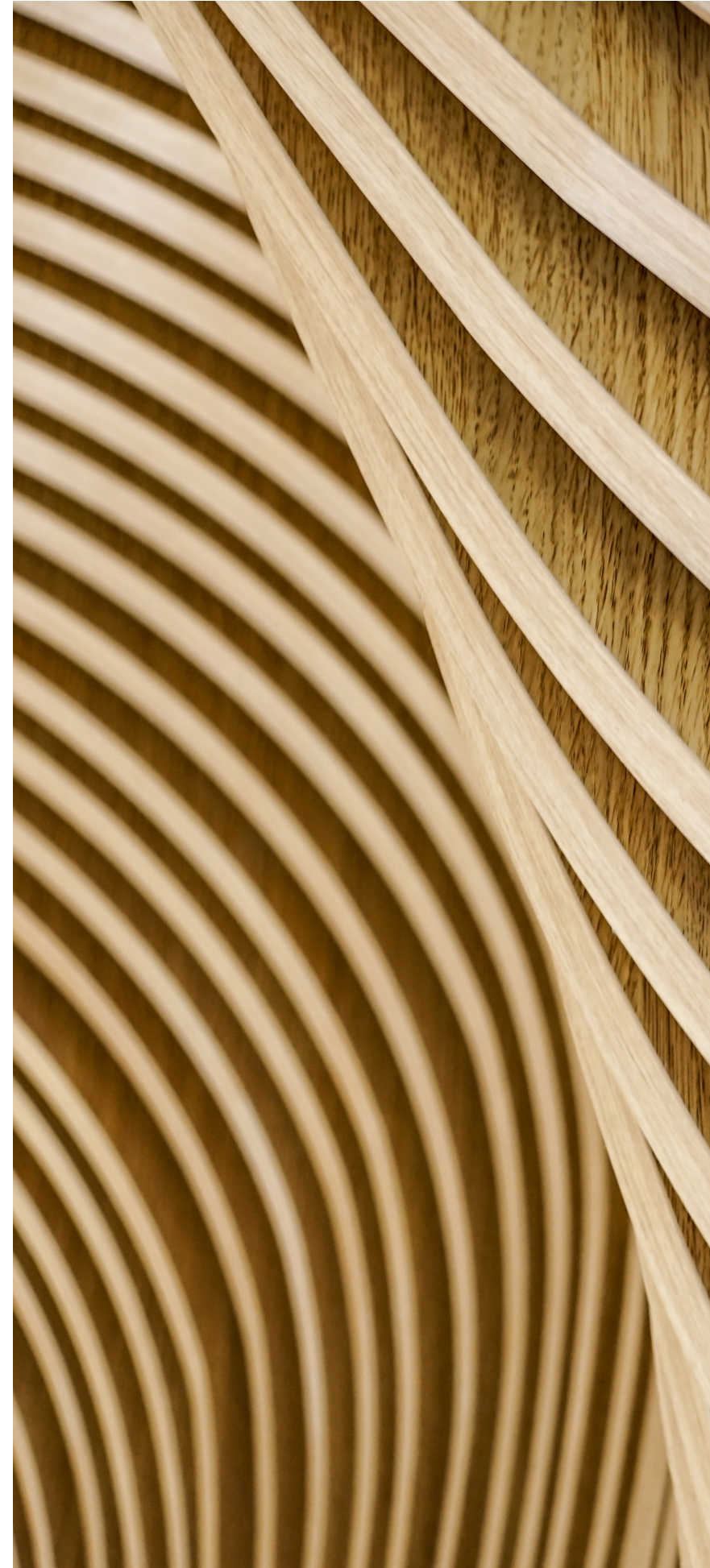
The Time is Now

- Targets and Timeline
 - Policies and Regulations
 - Design Communities' Commitment - AIA 2030, MEP 2040, SE 2050
 - Case Studies
-



Design Guidelines

- Resource for education, benchmarking and tools for reducing embodied carbon in commercial development in Buckhead
- Reference web-based embodied carbon Guidebook on Livable Buckhead website



Education

“Climate change knows no borders.”

- Angela Merkel

Embodied carbon refers to the greenhouse gas emissions arising from the manufacturing, transportation, installation, maintenance, and disposal of building materials. Embodied carbon is a significant percentage of global emissions and requires urgent action to address it.

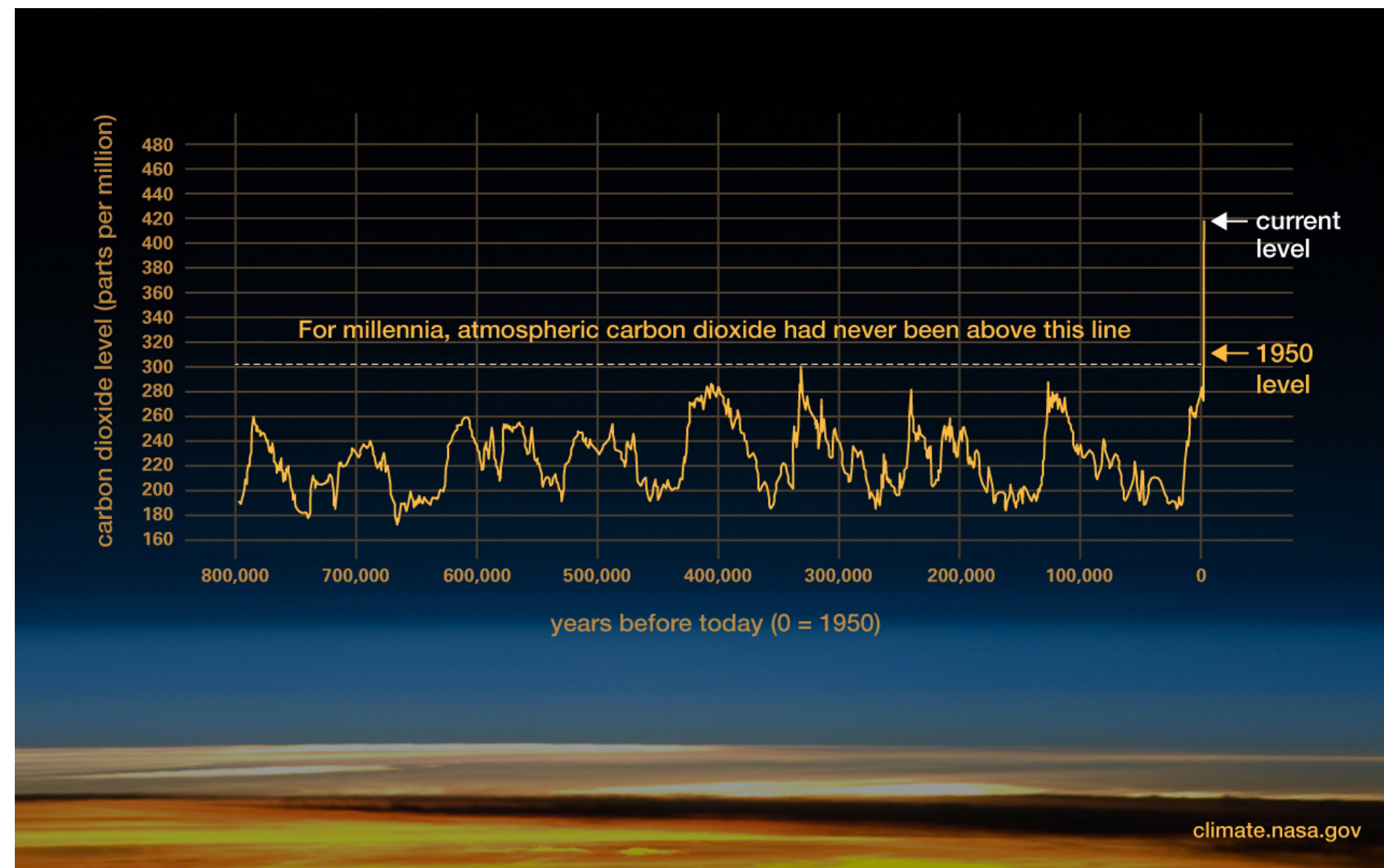


Source: <https://carbonleadershipforum.org/embodied-carbon-101/>

Embodied Carbon 101



The Time is Now. Targets and Timeline

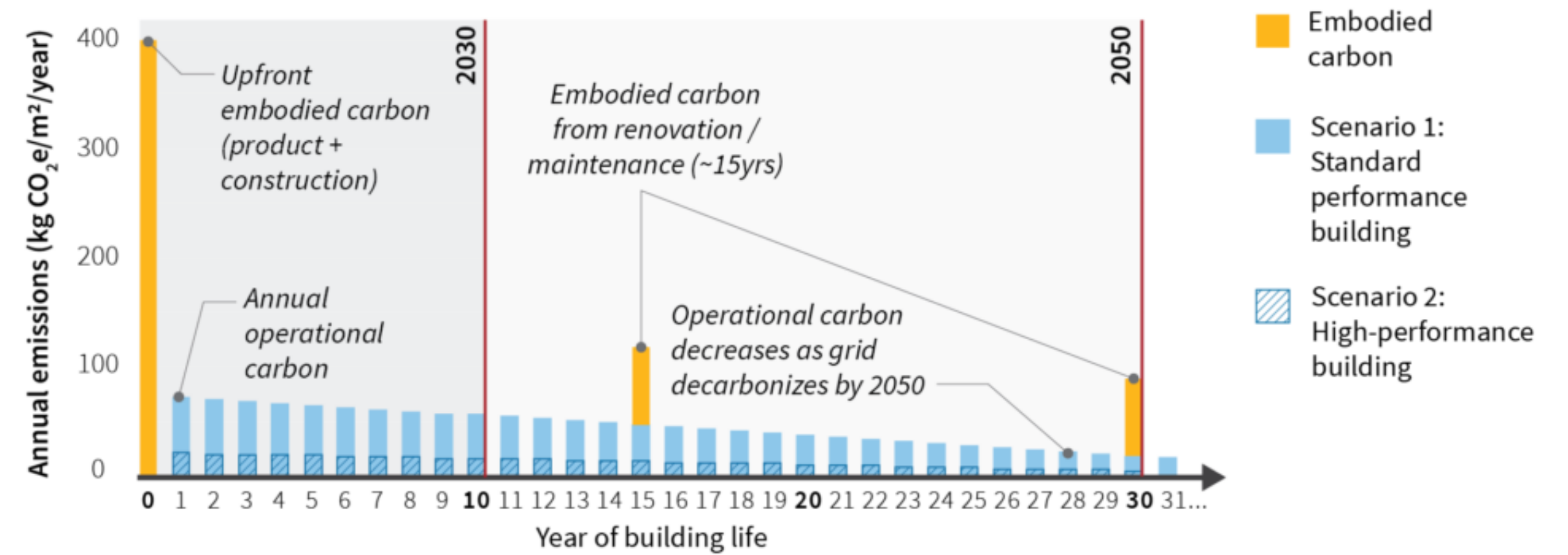


Source: <https://climate.nasa.gov/evidence/>

Figure 1

Global air temperatures near Earth's surface have gone up about two degrees Fahrenheit in the last century. The past five years have been the warmest five years in centuries for plants and animals.

According to the [Paris Agreement](#), in order to avoid an irreversible and catastrophic climate change trajectory, average global temperatures must not rise more than two degrees Celsius. Since (1) emissions accumulate in the atmosphere and (2) there is limited time remaining before the arrival of this tipping point, emissions released now are more critical than emissions released later. The majority of a building's total embodied carbon is released upfront in the product stage at the beginning of a building's life (see Figure 2). There is an urgent need to address embodied carbon now to meet short-term and long-term climate targets. For more information about this concept, see [The Time Value of Carbon](#).



Source: <https://carbonleadershipforum.org/embodied-carbon-101/>

Figure 2

Design Partners and Communities' Commitment

AIA 2030 | American Institute of Architects 2030 Commitment

The AIA 2030 Commitment is an actionable climate strategy that gives us a set of standards and goals for reaching net zero emissions in the built environment. The latest climate data tells us that reducing carbon emissions is not enough. To make the biggest impact, we must all commit to net zero emissions by 2030—a path that requires strong, immediate action. Since the built environment creates a staggering 40% of the world's emissions, architects, engineers, and owners play a key role. More than 1,200 firms have already committed to [reaching carbon neutrality by 2030](#).

MEP 2040 | Mechanical, Electrical and Plumbing 2040 Commitment

The challenge from the Carbon Leadership Forum: All systems engineers shall advocate for and achieve net zero carbon in their projects: operational carbon by 2030 and embodied carbon by 2040.

SE 2050 | Structural Engineers 2050 Commitment

All structural engineers shall understand, reduce and ultimately eliminate embodied carbon in their projects by 2050. The mission of the SE 2050 Commitment is to support the SE 2050 Challenge and transform the practice of structural engineering in a way that is holistic, firm-wide, project based, and data-driven. By prioritizing reduction of embodied carbon, through the use of less and/or less impactful structural materials, participating firms can more easily work toward net zero embodied carbon structural systems by 2050.

Policies and Regulations

[This article from RMI states](#) “The Green Building Advisory Committee (GBAC), an advisory body to the U.S. General Services Administration (GSA), approved a series of procurement principles to enable a shift to low embodied carbon building materials and approaches. These principles were proposed by the GBAC Embodied Energy Task Group co-chaired by RMI. The GSA’s vast procurement power gives it a unique ability to influence markets. Over the past decade 253 million square feet of buildings were constructed for GSA, representing more than \$11 billion in value. By shifting its procurement, GSA will accelerate the development of a market for low embodied carbon building materials and approaches in the United States, as a means to cut emissions in a stubborn sector.”

According to the [Center for Climate and Energy Solutions](#), thirteen US states have adopted market-based approaches and carbon pricing policies as part of the Regional Greenhouse Gas Initiative (RGGI) to reduce greenhouse gas emissions.

An article on [How Cities are Going Carbon Neutral](#) published by BBC talks about how 25 megacities have now pledged to become carbon neutral by 2050. These include Rio de Janeiro, New York, Paris, Oslo, Mexico City, Melbourne, London, Milan, Cape Town, Buenos Aires, Caracas, Copenhagen, and Vancouver.

[The New Buildings Institute has published this resource](#) stating that cities are also creating their own embodied carbon regulations with different types of initiatives addressing the greenhouse gas emissions in individual construction materials with procurement policies.

Case Studies

01 Benchmarking

Benchmarking values of embodied carbon in kilograms of carbon dioxide equivalent emitted per square meter (kg CO2e/m2).

(CLF)

Carbon Leadership Forum

North American Study

(Foundation, Structure, Enclosure, Interiors)

- Residential: 200 - 660
- Office: 270 - 540
- School: 230 - 460
- Mixed-Use: 200 - 640

(LETI)

London Energy Transformation Initiative

United Kingdom

(Substructure, Superstructure, Façade, Finishes, MEP)

- Residential: 800
- Office: 1,000
- School: 1,000

(RIBA)

Royal Institute of British Architects

United Kingdom

(Substructure, Superstructure, Finishes, Fixed FF&E, Building Services)

- Residential: 1,200
- Office: 1,400
- School: 1,400

(LCA)

One Click Life Cycle Assessment

Europe

(Varies)

- Office: 520 - 680
- School: 380 - 490
- Industrial: 500 - 560

Case Studies

02 Policy

Boston Planning & Development Agency (BPDA) - Zero Net Carbon Building Zoning Initiative

Boston's Building Emissions Reduction and Disclosure Ordinance (BERDO) sets requirements for large buildings to reduce their greenhouse gas emissions. The goal is to reduce emissions gradually to net zero by 2050. Buildings account for nearly 70% of greenhouse gas emissions in Boston. The 2021 amendment to BERDO gives the City authority to set emissions standards for large existing buildings.

BERDO applies to the following buildings:

- Non-residential buildings that are 20,000 sf or larger.
- Residential buildings that have 15 or more units.
- Any parcel with multiple buildings that sum to at least 20,000 sf or 15 units.

City of Boston's steps for Boston to be carbon neutral by 2050:

1. Construct new municipal buildings to a zero net carbon standard
2. Adopt a zero net carbon standard for city-funded affordable housing in Boston
3. Strengthen green building zoning requirements to a zero net carbon standard
4. Invest in energy efficiency and renewable energy
5. Develop a carbon emissions performance standard to decarbonize existing large buildings
6. Expand workforce development programs for building decarbonization
7. Advocate for state building policies that align with carbon neutrality by 2050

Other case studies for embodied carbon city initiative, zoning and land use policy include:

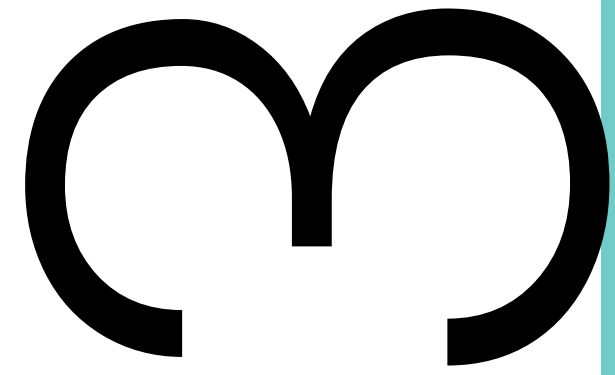
- Austin Energy Green Building (AEGB)
- City of Seattle Green Building / Expedited Green Program
- San Diego County Green Building Incentive Program
- City of Vancouver (BC) Green Building Rezoning Policy
- Helsinki (Finland) Zoning Requirements for Bio-based Materials
- London (UK) Citywide Parking Reform

Design Guidelines

Intelligence is not the ability to store information, but to know where to find it.

We have provided a list of resources that cover a variety of information on these topics:

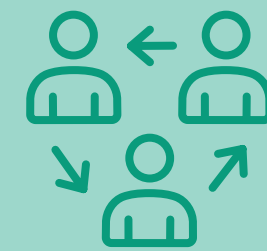
- Life Cycle Assessment (LCA Tools and Calculators)
- Whole Building Life Cycle Assessment (WBLCA Tools)
- Resources for education, research, toolkits, case studies and videos from the Carbon Leadership Forum website
- Carbon reduction strategies from the Carbon Leadership Forum website
- Information and resources from the ownersCAN Carbon Action network including their ECAP
- The Construction Material Pyramid
- Parson's Healthy Material Guide
- Zero Carbon – International Living Future Institute
- Benchmarking for Materials
- Benchmarking for Projects



ADVOCACY

Advocacy

Broadening stakeholder engagement and establishing a Life Cycle Assessment reporting program are key to bringing advocacy and awareness to the importance of reducing embodied carbon.



Stakeholder Engagement

Tackling embodied carbon will take a coordinated effort by all stakeholders. It's critical to encourage conversation around the value and importance of reducing embodied carbon in the built environment. Building upon its near-term stakeholder engagement, Livable Buckhead is committed to continuing and broadening stakeholder engagement opportunities.



Reporting

Using reporting tools, such as Life Cycle Assessment (LCA), provides owners with transparency and awareness in the short-term, which leads to accountability in the long-term. Livable Buckhead is committed to establishing a voluntary reporting program as a mid-term goal of the ECAP.



March 2023 Steering Committee Meeting at Terminus Commons



April 2023 Steering Committee Meeting at Piedmont Center

Stakeholder Engagement

Livable Buckhead will continue to...

- provide education, resources, and tools for embodied carbon reduction, including targets, baselines, and benchmarks
- share compelling reasons for implementing carbon reduction strategies in commercial development
- invite feedback and participation from the broader Buckhead community
- guide conversations to reduce embodied carbon, where it becomes a performance standard in Buckhead
- listen to Buckhead stakeholders' needs to evolve and shape the agendas for the future meetings

Reporting

Life Cycle Assessments

Understand the environmental impacts of how a project is designed by conducting a building Life Cycle Assessment (LCA).

PURPOSE OF AN LCA

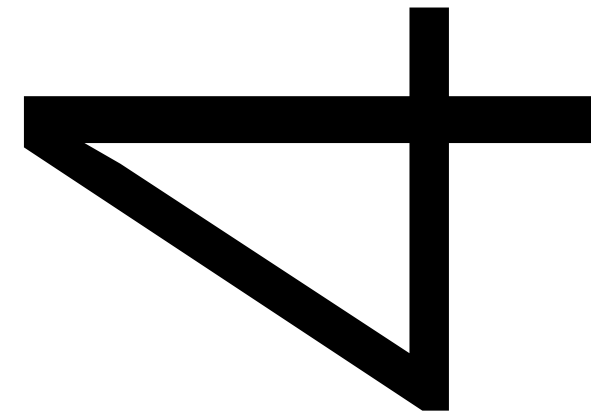
- Track emissions and environmental impacts:
 - Global Warming Potential (GWP)
 - Acidification potential
 - Eutrophication potential
 - Ozone depletion potential
 - Smog formation potential
- Identify hotspots in building design
- Evaluate design options
- Iterative process

COMPONENTS OF AN LCA

- Define goal and scope
- Collect inventory
- Perform impact assessment
- Interpret results
- Report results

BENEFITS OF CONDUCTING A BUILDING LCA

- Target identified hotspots for reduction
 - Example: 5% reduction of kg CO₂e/m² in building structure and enclosure
- Compare design options for GWP impact
 - Identify and select design with lower GWP
- Obtain green building rating points



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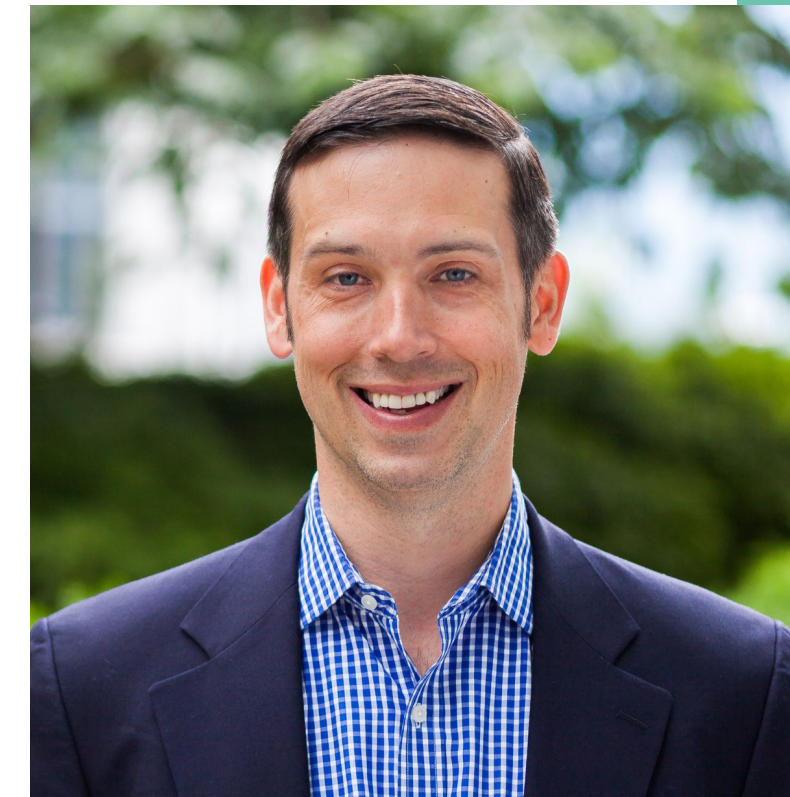
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