

EMBODIED CARBON IN BUCKHEAD

Defining the Vision



Atlanta, Georgia | February 4 & March 4, 2025

About

ULI Atlanta

Urban Land Institute is a global, member-driven organization comprising more than 48,000 real estate and urban development professionals dedicated to advancing the Institute's mission of shaping the future of the built environment for transformative impact in communities worldwide. ULI's interdisciplinary membership represents all aspects of the industry, including developers, property owners, investors, architects, urban planners, public officials, real estate brokers, appraisers, attorneys, engineers, financiers, and academics. Established in 1936, the Institute has a presence in the Americas, Europe, and Asia Pacific regions, with members in 84 countries.

With over 1,400 members across the state of Georgia, ULI Atlanta is one of the largest and most active ULI District Councils worldwide. We bring together leaders from across the fields of real estate and land use policy to exchange best practices and serve community needs. We share knowledge through education, applied research, publishing, electronic media, events, and programs.

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ULI Randall Lewis Center for Sustainability in Real Estate

The ULI Randall Lewis Center for Sustainability in Real Estate (the Center) leads the real estate industry in creating places and buildings where people and the environment thrive. In collaboration with ULI members and partners, the Lewis Center drives industry transformation, cultivates leaders and champions, and helps foster solutions for sustainable, resilient, healthy and equitable cities and communities. The Center pursues these goals via cutting-edge research, global convenings, community technical assistance, and other strategies. The Center's main programs are Decarbonization, Urban Resilience, and Healthy Places.

The Net Zero Imperative

Thanks to a generous gift from Owen Thomas, ULI has launched the Net Zero Imperative—a multi-year initiative to accelerate decarbonization in the built environment. Additional gifts from Lynn Thurber, Joe Azrack, Franz Colloredo-Mansfeld, and Dan Cashdan further support and bolster the NZI program's scale and impact. Work to advance the initiative includes technical assistance panels in five global cities each year, designed to help developers, building owners, cities, and other relevant constituents reduce carbon emissions associated with buildings, communities, and cities.

The fundamental goal of the effort is to provide concrete ideas and strategies to real estate owners, public sector leaders, and the general public to eliminate carbon emissions from the built environment to reach net zero. Through its work, the initiative will create global resources (research, toolkits, and other tools) to help all ULI members accelerate decarbonization in their real estate operations and in their cities.



Livable Buckhead

Livable Buckhead is a nonprofit organization dedicated to the long-term vitality and prosperity of Atlanta's Buckhead community. With a mission to integrate sustainable strategies that enhance the environment and quality of life, Livable Buckhead plays a leading role in shaping a resilient, thriving, and inclusive urban district that serves the needs of both residents and businesses.

Livable Buckhead focuses on a wide range of interconnected initiatives, including green space expansion and activation, transportation and mobility improvements, sustainability and environmental stewardship, and community engagement and economic vitality. Signature projects include the development and stewardship of PATH400, a transformative multi-use greenway that connects neighborhoods, parks, and workplaces across Buckhead, and initiatives that support clean commuting, recycling, composting, energy efficiency, and water conservation.

Livable Buckhead convenes Buckhead's Development Review Committees for Special Public Interest Districts SPI-9 and SPI-12, guiding the implementation of zoning requirements that support a walkable, transit-oriented, and high-quality urban environment. Through its strategic programs and partnerships, Livable Buckhead helps ensure Buckhead remains a premier destination to live, work, and play—both now and in the future.

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This workshop series was sponsored through a grant from the ULI Randall Lewis Center for Sustainability in Real Estate and held in partnership with Georgia Power. These trusted partners aligned with ULI Atlanta and Livable Buckhead to advance low and zero carbon initiatives in the built environment and brought experts from across North America to the Atlanta Metro to discuss practical real estate solutions and chart a path forward for Livable Buckhead.

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Key Workshop Takeaways

Atlanta's Buckhead neighborhood is known for its Class-A high-rise office buildings, luxury hotels, premier shopping centers, and upscale residences. The neighborhood serves as an economic driver in the Atlanta metropolitan region and is making great strides toward fully embracing sustainable development practices.

Livable Buckhead, the neighborhood nonprofit with a mission to "make this community the kind of place where people want to live and where businesses want to operate – both now and well into the future," understands the role it can play in continuing to champion sustainable development and advancing practices that enhance both environmental resilience and community well-being.

Continuing to push its mission and drive sustainability across the neighborhood's buildings, Livable Buckhead identified embodied carbon in building materials as a key area for impactful change.

Livable Buckhead recognizes the need to shift the mindset of property owners and developers in the neighborhood, encouraging developers and designers to prioritize low-carbon materials and construction techniques from the earliest stages of a project.

With the support of the Urban Land Institute Atlanta District Council (ULI Atlanta) and the Urban Land Institute's Net Zero Imperative (NZI) Program, Livable Buckhead held the

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Reducing the emissions associated with the extraction, production, transportation, and disposal of building materials—also known as embodied carbon—is increasingly becoming a top priority for real estate professionals looking to advance sustainability goals and achieve net zero.

—The Developer's Guide to Embodied Carbon

first in a pair of workshops designed to help participants identify the best ways to encourage lower-carbon building practices through updates to Buckhead's zoning and permitting processes. The goal of the work is to position Buckhead as a model of innovation and sustainability for Atlanta and beyond.

Specifically, the workshops seek to identify pathways for integrating embodied carbon requirements into the zoning and permitting processes and define how Livable Buckhead can collaborate with developers and the City of Atlanta's Office of Buildings to ensure sustainable outcomes throughout the building lifecycle.

The questions posed to participants of the first workshop were as follows:

- What are other cities and counties doing to address embodied carbon in the built environment?
- How are the development and design communities adapting to new requirements for more sustainable building practices?
- Is the Buckhead market prepared to comply with voluntary or mandatory embodied carbon reporting requirements? Embodied carbon reduction requirements?

A set of briefing materials for participants, assembled by Livable Buckhead in conjunction with the team from ULI Atlanta and ULI NZI, outlined a brief history of development in the Buckhead neighborhood, defined and addressed embodied carbon in the built environment, provided a synopsis of two ULI Atlanta mini technical assistance panels (mTAP) on the topic, outlined Livable Buckhead's goals for embodied carbon reporting, and provided a developers' guide and intervention points for building greener.

Initial survey work conducted by Livable Buckhead identified a low awareness of embodied carbon (EC) among their constituents, including building owners, property managers, tenants, and residents. When the term was explained further, most survey respondents ranked EC as an important issue that should be addressed.

Livable Buckhead further identified the following three factors as having a significant impact on the potential pursuit of reduced embodied carbon materials and building processes in Buckhead:

- **Market viability.** Will the market understand and value the measures, particularly if there is a cost premium associated with buildings that use low EC materials or processes?
- **Policy and incentives.** The neighborhood is already “zoned for the sky,” so incentives will have to stretch beyond typical density bonuses.
- **Community priorities.** The Buckhead neighborhood is known for its very engaged residents and owners. Piquing their interest and intention around EC can help move the market in the right direction.

Livable Buckhead leadership is committed to pushing the envelope but is careful not to extend too far beyond priorities identified by the community. Working within this framework, ULI Atlanta's first mTAP team conducted stakeholder engagement exercises and policy case studies to create a realistic timeline and platform for addressing embodied carbon in Buckhead. The result of the team's work is the [Embodied Carbon Action Plan](#), which outlines a four-step process that Livable Buckhead can follow now and within the next five years.

1. **Near-term** (start immediately following the 2023 mTAP): Bring education and awareness of embodied carbon to the community. Livable Buckhead has launched education efforts and is sharing information about reducing EC and its benefits with the broader community to help effect change.

2. **Short-term** (years 1 and 2): Provide education for benchmarking materials and products; establish a baseline measurement; and update the Development Review Committee (DRC) Sustainability Checklist to improve EC reduction practices.
3. **Mid-term** (years 3 and 4): Promote projects that embrace reduction measures; generate a pilot project; establish voluntary life cycle assessment reporting; implement ECAP updates; and recommend materials that minimize emissions.
4. **Long-term** (year 5+): Incorporate low-EC measures into the zoning code; update the Buckhead Strategic Sustainability Action Plan to incorporate EC goals; and align with Central Atlanta Progress and Midtown Alliance.



To further support Livable Buckhead's EC educational goals and provide a foundation for the benchmarking and measuring called for in the second "short term" step noted on the previous page, a second mTAP for Buckhead used a case study format to identify materials and processes typically used in high-rise multifamily buildings that produce embodied carbon. The mTAP team noted that building life cycle assessments (LCAs), which consider factors from material extraction to disposal, were the primary tool used to evaluate the environmental impact of a development. The team further analyzed industry targets and identified four key strategies to reduce embodied carbon:

1. **Material selection:** Utilizing lower-carbon alternatives.
2. **Design optimization:** Implementing efficient designs requiring fewer materials.
3. **Construction techniques:** Employing prefabrication and improved on-site operations.
4. **Reuse and renovation:** Reusing existing materials and utilizing lower-carbon replacements.

The result of this work was [benchmarking and the establishment of a baseline for a typical Buckhead high-rise multifamily building](#). The work assessed the reduction

potential of various strategies, including low-carbon concrete and windows, and demonstrated significant potential for improvement.

The February 4, 2025 workshop represented the next step in Livable Buckhead's path toward prioritizing low-carbon products and materials in its built environment. Education again took center stage, this time focusing on materials and processes that could reduce EC and the manners by which Livable Buckhead can establish a baseline and measurements for area building owners and developers. The following pages summarize that workshop, highlight case studies and best practices, and lay the foundation for the types of policies Livable Buckhead can explore as it considers measures to promote and even regulate the use of low EC materials and processes in Buckhead's built environment.



Partners in the Effort

Georgia Power is committed to making, moving, and selling energy. The company supports communities in their pursuits of growth and have been pursuing economic development in their footprint for over 100 years.

ULI Randall Lewis Center is focused on decarbonization, resilience, healthy places, and cost cutting. The Center conducts research and thought leadership, works with the Greenprint community of practice, and provides local technical assistance.

Case Study

619 Ponce

At Atlanta's Ponce City Market, 619 Ponce is a mass timber project that “breaks the boundaries between inside and out, creating unrestrained space where ideas—and innovation—can flow.”

While timber is not a new building material, how it is being used in innovative engineered formats is new and helps building owners and developers reduce embodied carbon.

At 619 Ponce, the pursuit of a low-carbon footprint is found in its walls and windows. The timber structure is often exposed and

visible both inside the building's spaces and on the exterior. The building features three balconies and operable windows every ten feet, providing occupants with ample access to natural light and fresh air.

Materials and sourcing. As Georgia has a significant timber supply, the developer worked with Georgia Pacific, a sustainable forester, to source most of the Southern Yellow Pine from within a 300-mile radius of the project site. The developer then replanted to replenish the timber harvested using Seedlings to Solutions. A local manufacturer was used which helped reduce the carbon associated with transportation and installation of the timber.

Production. When compared to a neighboring concrete project under construction at the same time, 619 Ponce had eight workers on the site per day while the concrete project required 150 people each day. The mass timber construction process produced half as much waste as the concrete development. The project was safer, had a smaller embodied carbon footprint, and generated less waste than the neighboring project.

- The production schedule was faster than concrete construction, which reduced costs.
- There was a 10 percent premium on the building costs, but the building was



JAMESTOWN, L.P.

designed as a premium building that would be able to secure rents to recover the higher materials costs.

- The timber columns are lighter and yet over-built so that in the event of a fire the columns can reduce down without impacting the structural integrity of the building.

It is also helpful to note that this was not the first mass timber project for Atlanta, so the requisite codes and inspections did not prompt any delays.

Tenants. Tenants were a key part of the building delivery as the developer pursued tenants who were looking for timber and low EC building environments that would align with their own corporate energy and environmental goals. Sage, an accounting software company, is a key tenant and has stated that the building aligns with its corporate environmental goals. Pottery Barn is the building's key retail tenant. The retailer looked specifically for a space that aligned with their company's ethos.

For more information, visit [619 Ponce](#).





Education and Awareness

Livable Buckhead is committed to differentiating Buckhead from other commercial districts in Atlanta through a sustainability initiative focused on reducing embodied carbon. To support this effort, Livable Buckhead has embraced the recommendations set forth in the mTAP studies and is working to increase education and awareness of embodied carbon across the neighborhood.

Livable Buckhead is providing education to the community using a guidebook published by the mTAP team that emphasizes the benefits of benchmarking for property owners. They are also sharing tools for reducing EC in commercial development in the area.

Further supporting this educational effort, [the Developers Guide to Embodied Carbon, Intervention Points for Building Greener](#), is ULI's user manual for developers and building owners. The report outlines the various intervention points along a building's life cycle and where decisions can be made that will have lasting impacts on reducing embodied carbon. The report identifies when and how project teams can address embodied carbon during concept, design, construction, operations, and end of life, and features sample projects that have implemented interventions to realize dramatic reductions. The report also outlines how reduced EC creates material impacts on the climate, human health, racial equity, ecosystem health and vitality, and material

circularity. The movement toward better materials can meaningfully reduce EC and is further influenced by governmental regulations, green building classifications, occupier demand, enhanced building value, and ESG investing.

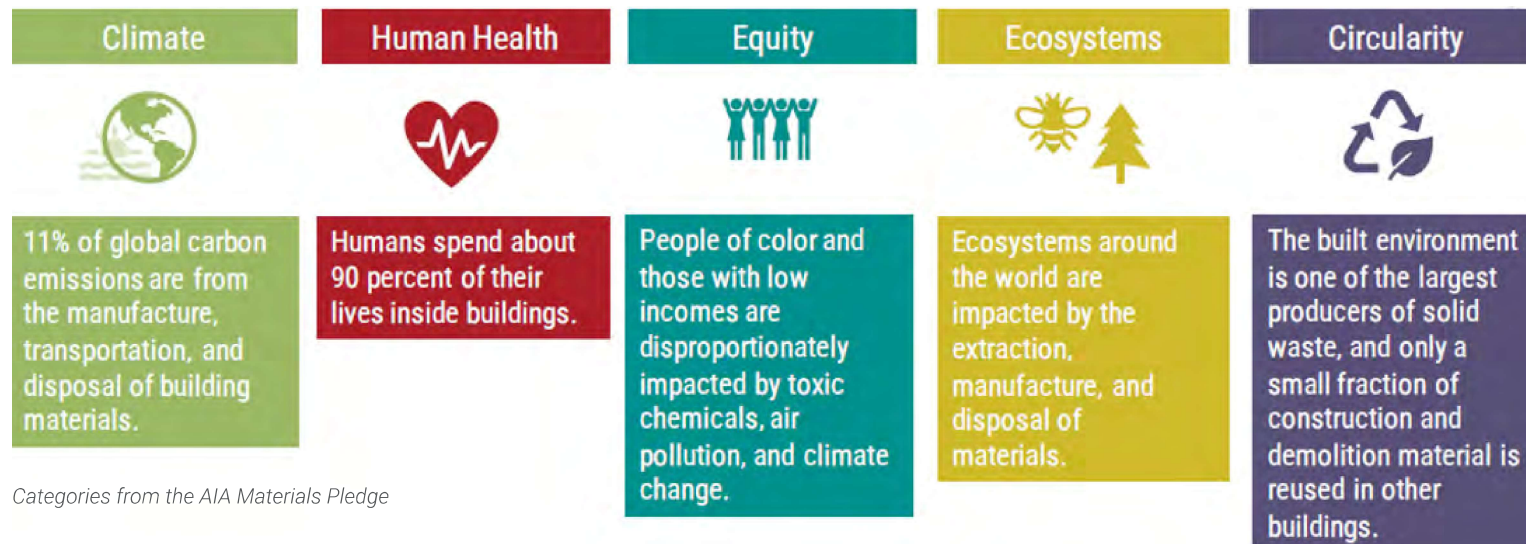
Material Selections

The next step in the EC education process involves developing an actionable plan to facilitate developers' and contractors' reduction of embodied carbon in the built environment.

Material selections play a critical role and early conversations with design and engineering partners can have significant impacts on the ultimate carbon impact of a

Material Impacts

How do building material choices impact people and the environment?



Categories from the AIA Materials Pledge

building. Starting with foundational materials like concrete, steel, and windows, material selections can greatly reduce a building's EC.

- **Concrete.** By moving to a high supplementary cementitious material (SCM) instead of traditional cement, measurable EC reductions can be achieved. (A new [guide to performance-based concrete specification](#) can provide additional information and guidance in this selection process.) By moving from pre-cast concrete to aluminum in the cladding, a developer was able to reduce the building weight by ten percent.
- **Steel.** Using electric arc furnace (EAF)-processed recycled materials can lower a building's EC.
- **Windows.** Using aluminum framing and double glazing on windows, embodied carbon can be reduced by as much as 28 percent¹.

In addition to building materials, it is important to include education and awareness of the impacts of plant materials and biodiversity in and around the built environment. Developers and building owners who incorporate greenery and biodiversity into a project will further draw down the project's carbon.

¹ ULI Atlanta 2024 mTAP, Embodied Carbon Case Study And Reduction Analysis

Livable Buckhead is encouraged to raise awareness of these important early design and material selection decisions. Through early collaboration with engineers, developers can fine-tune building designs to move to lighter materials with lower EC.

Lower EC Materials and Cost Considerations

Findings from the mTAP also included information about the costs associated with lower EC material selections. Key findings note that steel, concrete, and insulation alternatives are available without cost premiums. Windows and curtain walls did have some cost premiums that will need to be considered. These findings are important elements in the education and awareness campaign regarding material selections as lower EC materials do not always come with increased costs.

The mTAP recommendation to Livable Buckhead to formulate an embodied carbon narrative to help educate the public and raise awareness should include information about materials selections and associated cost equivalencies.


The Materials Movement: Creating Value with Better Building Materials



Published in 2024, [this ULI report](#) provides an introduction for real estate owners, developers, and investors to understand why and how to integrate healthy, sustainable building materials in new and existing development projects.

Real estate developers, owners, and investors play an essential role in the industry's transition to better building materials. When development teams request low carbon spaces that are free from harmful chemicals, manufacturers, design teams, and contractors respond to the increased demand, and work to improve their products and selections. Enhancing the health and sustainability of materials provides multiple benefits for business, people, and the planet, and the real estate industry can help bring about change to improve long-term outcomes for individuals and communities.

[Read the full report here.](#)



Establish a Baseline
+ Formulate Policies

The carbon reduction work Livable Buckhead has completed to date includes the establishment of a baseline for a typical high-rise structure in the area that can be used to track improvements across the built environment well into the future.

The baseline, developed through the efforts of the 2024 mTAP case study, uses data from a survey of comparable cities' efforts and points to key areas where EC reductions have the greatest impact—most notably embodied carbon reduction in concrete and windows.

The report also explores key reduction strategies, using different materials and construction modifications, to achieve a lower EC footprint. It also provides a framework for a voluntary embodied carbon reporting program.

Policy Instruments

While some building owners and developers may voluntarily pursue measures to lower embodied carbon, Livable Buckhead also has an important lever at its disposal to not only

encourage but actually require measures that will achieve better building performance. Through its role in the development review process, Livable Buckhead can more directly influence change through updates to the neighborhood's building codes.

From light policy measures that raise awareness to more stringent actions that involve regulations, civic and public leaders should explore the range of approaches and determine the best alignment for Buckhead.

- **Awareness.** Light policy interventions can include awareness campaigns, targeted training, and workforce development for new technologies and building processes.
- **Voluntary Actions and Agreements.** Inspiring actions through voluntary goals and commitments, early adoption incentives, and voluntary certification (LEED, etc.) can often induce change.
- **Incentives.** Development incentives could include waived fees, expedited permitting, subsidies, tax breaks, research and development funding, performance bonuses, and technical assistance.
- **Disclosure.** Requiring reporting of environmental and other data can assist with improvements in carbon reductions.
- **Regulatory Approaches.** The most active approaches can involve mandatory obligations, performance standards, new codes, zoning, and permitting requirements.

ULI Atlanta 2024 mTAP

Embodied Carbon Case Study and Reduction Analysis

From the report: The Carbon Leadership Forum (CLF) maintains a database of the embodied carbon footprint of buildings by building type. While not without its limitations, it is the only trusted source of information available for benchmarking the embodied carbon performance of buildings.

Based on the mTAP team's professional experience with similar building types, including multifamily, student housing, and hotels, it is reasonable to expect that a business-as-usual multifamily building

constructed in 2024 would be approximately 10 percent better than CLF's benchmark of 373, at 336 kg CO₂e/m².

CLF has also developed a [material baseline](#) in support of the Embodied Carbon in Construction Calculator (EC3). The EC3 tool and its open-access database of digital EPDs are one source for accessing and evaluating available EPDs and the relative carbon impacts that they report. Such databases support designers, owners, and policymakers in selecting low-carbon products during procurement and design. These databases are dynamic, updated constantly as new products are added and upstream data on key processes, such as carbon intensity of regional electricity grids, are revised.

[Read the full mTAP report here.](#)

Category	Embodied Carbon Baseline (kg CO ₂ e/m ²)
Structure (70%)	235.2
Enclosure (20%)	67.2
Interiors (10%)	33.6
Total for stages A1-A3* (100%)	336

Prescriptive and performance-based policies can be used to encourage EC reduction. Prescriptive policies, which can be used to dictate material selection or process adherence, can be easier to implement at the outset than performance-based policies yet may not result in the type of net positive benefit policymakers would typically seek. Performance-based policies can often result in greater positive net impacts in reduced carbon yet these policies typically require more expertise to execute and track over time.

Recommended Policy Approach for Buckhead

The mTAP's recommended policy approach for Buckhead hinges on a performance-based program that is voluntary in early days, incentive-based, and required in certain building conditions.

- Phase One: Introduce a voluntary reporting program for projects. Use environmental product declarations (EPDs), which are standardized, third-party-verified documents that report the environmental impacts of a product based on a product life cycle assessment (LCA), and set quantity reporting for high-impact materials.
- Phase Two: Use an incentive-based voluntary LCA study using LEED v4 scoring standards to demonstrate a 10 percent reduction in order to obtain

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We cannot improve what we do not measure—this applies to building performance and points to the need to use a life cycle assessment.

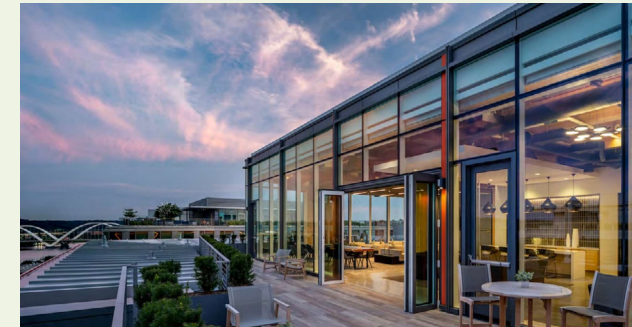
—Workshop Panelist

development incentives (e.g., height or density bonus or a reduction in open space requirements). Alternatively, this phase could use a required LCA study for projects over a certain threshold or of a certain building type.

- Phase Three: Require an LCA study and performance thresholds with incentives for additional optional thresholds. This phase could also provide incentives or rewards for higher-performing projects.

The [Carbon Leadership Forum](#) has established a 2023 North American Material Baselines database and embodied carbon in construction calculator, both of which can assist building owners and program administrators with measuring and tracking building and materials performance over time.

The Business Case for Reducing Embodied Carbon



There is a business case to be made for reducing embodied carbon, which can be evidenced by financial benefits such as lower operating expenses and increased asset value. Reducing EC bolsters energy reliability and grid resilience, as well as supports compliance with local and broader regulations. Finally, more investors are looking for these projects, and engaged tenants are seeking buildings that align with their environmental values.

From [The Developer's Guide to Embodied Carbon](#), "there is a strong business case for real estate to address embodied carbon, and project teams that have successfully reduced embodied emissions have also experienced considerable financial benefits, such as enhanced building value, faster lease-ups, and reduced costs."

Municipal Rating System

Austin Energy Green Building

Austin Energy Green Building (AEGB) cultivates innovation in building for the enrichment of the community's environmental, economic, and human well-being. In 1991, AEGB developed the first rating system in the U.S. for evaluating the sustainability of buildings and today provides design tools and rates the sustainability of new and remodeled buildings. AEGB also offers personalized consulting services to help design and building professionals meet the specific sustainability goals for single-family, multifamily, and commercial buildings. AEGB works with design, construction, and operations teams to help them through the processes and allay concerns about what will be required.

AEGB Star Rating System

The AEGB star rating system is a whole-building rating that aims to reduce building carbon by 40 percent. The ratings are tied to the City of Austin permitting process and zoning areas include AEGB rating requirements, generally requiring that buildings meet at a minimum one- to two-star requirements out of a total of five stars. More than a checklist, the rating system is designed to push a path forward in climate, health, and equity that is also closely aligned with LEED, WELL, and SITES goals.

The intention of the rating system is to help the City of Austin establish an EC baseline of the local building stock and enable building designers to measure and replace the environmental impacts, including the global warming potential, of buildings.

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Americans spend 90 percent of time indoors and buildings are responsible for 42 percent of CO2 emissions.

– Greg Arcangeli, City of Austin

Across Austin, 21,573 projects have been rated, including 20,000 single-family homes, 229 multifamily buildings, and 397 commercial projects. The municipal enforcement tool is the receipt—or not—of a certificate of occupancy for the building.

A rating process might adopt a methodology similar to the energy modeling system and it is helpful to first model the rating type as was done for the energy rating system.

Community engagement and feedback are important to the eventual success of the effort and AEGB provides regular seminars and events on a variety of green building topics. The team also uses Speak Up Austin to gather community input on ratings updates and extend invitations to the community to participate in stakeholder meetings.

Innovation to Market Transformation. AEGB uses a process of continuous improvement where each movement addressed in the process leads to the next. In the case of the

star rating system, the elective measures taken by developers and building owners eventually become core measures, which are key to the City of Austin meeting its climate goals.

The movement toward mandated codes is a long-term process. The [CalGREEN](#) green building code used by the California Department of Housing and Community Development is the first such state-led green building code system, and it is still not yet mandatory.

AEGB Required Measures

Reporting on materials quantities. This requirement addresses a report on the materials used to construct the building, a calculation of the Global Warming Potential (GWP), and identification of materials with the greatest GWP (using the purchased quantities to “true up” the calculation and account for waste). The City created a tool to measure GWP, which is shared freely with project teams for use on their sites.

Optional Measures

Environmental product declarations (EPDs). Project teams provide product-specific EPDs for any of the following: all functional concrete, 20 percent of the construction materials by cost or GWP, and 40 percent of the construction materials by cost or GWP. The goal is to select low EC materials and signal to the industry that there is demand for lower EC products. (The concrete companies are generally aware that this requirement is

on the horizon and are waiting for the regulations to finally lock in place). This applies across all public and private projects.

Life cycle assessment (LCA). The LCA provides information on the environmental impacts of a building. This includes an LCA for building components that demonstrate a reduction in GWP such as structure or enclosure or structure and enclosure, and aims initially for a 5-20 percent GWP reductions. The [Austin Climate Equity Plan](#) has set a target for all new construction to be 40 percent less carbon-intensive and fully net-zero by 2040.

Construction and demolition waste. This measure aims for disposal of fewer than 2.5 pounds per square foot to the landfill or incineration; the use of an RCI-certified hauler for at least 90 percent of construction and demolition (C+D) waste; deconstruction of buildings previously onsite; potential redesign of the building for reuse; provide construction waste hauling services for all first generation tenant finish-out portions of core and shell projects; and ensure at least 50 percent of the floor area of ground-level retail tenant space has no slab.

AEGB Today and into the Future

The star rating system is having an impact across Austin, yet challenges remain.

Leaders are focused on the next round of updates which might address some of the following:

Smaller project modifications. The largest strides have been with larger commercial projects while smaller projects—typically those under 20,000-25,000 square feet—have been the most challenging.

Tenant finishes. AEGB does not rate the materials and processes used to build out an individual tenant's space and instead focuses its ratings on the base buildings. AEGB does give the building owners tools for considering and including tenant finishes in EC decisions that affect finishes.

On the horizon. The following list represents the next big steps for AEGB:

- Create local whole-building embodied carbon probabilistic baselines.
- Establish a lower-carbon concrete plan for municipal capital projects. This is moving faster than anticipated and goes

beyond sidewalks and parking lots to also address municipal buildings coming out of the ground.

- Further work on the emerging deconstruction focus.
- Establish carbon as a common reporting metric and open the door to more types of incentives for EC reduction.
- Address points of potential intervention along the building process:
 - » At site development permit review, AEGB has a chance to review the project and suggest modifications that can create significant improvements in performance and lowering EC.
 - » The early schematic design phase is a great point at which to set goals to achieve the rating, as projects that have designs locked in are harder to adjust along the way. (For Buckhead, this review comes at the zoning stage. Leaders should consider at what stage in the project to set these goals.)





LEED v5

U.S. Green Building Council

The U.S. Green Building Council's LEED rating system has become the widely used standard for leadership in energy and environmental design in the built environment. The recent LEED v5 update is "built by the market for the market" to drive the built environment further toward a low-carbon future that is equitable, resilient, and promotes health.

The LEED v5 update is designed to provide greater flexibility for projects and more opportunities to evolve rating system requirements in response to a rapidly changing market. Operational carbon, embodied carbon, and transportation are all addressed and have multiple sub-categories, and assessments and visualization tools are available to help teams achieve v5.

LEED v5 has been developed around three central areas of impact that are connected to every credit and prerequisite of the program:

- **Quality of life.** Improving health, well-being, resilience, and equity for building occupants and their communities, making spaces not just environmentally friendly but also people friendly.
- **Ecological conservation and restoration.** Emphasizing strategies that limit environmental degradation and contribute to the restoration of ecosystems, ensuring that the built environment exists harmoniously with nature.
- **Decarbonization.** Targeting reductions in operational, embodied, refrigerants, and transportation emissions.

The goal is building design and construction projects that are near zero carbon by 2050. While far more challenging than addressing new construction, LEED v5 also tackles operations and maintenance of existing buildings with a goal of decarbonizing existing buildings as well.

Driving Action on Embodied Carbon in Buildings (RMI and USGBC Report)

Supporting the LEED system, a recent report published by RMI and the U.S. Green Building Council addresses design interventions for embodied carbon. The RMI analysis outlines the following key interventions.

- 1 Reuse.** Reuse an entire building and/or components of a deconstructed building. Limit the scope of renovations to what is needed. Prioritize salvaged materials over new production.
- 2 Right-size.** Optimize building size by using space more intensively and minimizing excess space. Design with better scheduling or dual-use spaces to decrease the building size.
- 3 Dematerialize.** Expose structure instead of applying finishes. Optimize structural system to minimize excess material. Consider reducing overdesign by evaluating conservative load assumptions.
- 4 Carbon storing materials.** Carbon storing materials can speed transition to zero embodied emissions. Building projects can

Steel Recycling at Georgia Tech

One of the February 2025 workshop participants, a structural engineer, shared the following story of structural steel recycling with the assembled group.

At GA Tech, designers are recycling 20+ tons of steel into a new building structure. What started out as a "fun design challenge" has become an important data point as the reuse of the existing materials did not come with any additional costs.

In this case, the structural engineering team on the new project were some of the same engineers who had designed the building being taking down. The team had access to the original building plans and were able to identify where the steel was located, how it was used, and how it might best be reused in the new building.

ask for responsibly produced biobased and concrete materials that can store carbon durably.

5 Product substitutions. Make substitutions for the highest impact materials informed by a whole-building integrated approach or by low-material GWP limits when an LCA is not feasible.

6 Sourcing. Ensure products are coming from legal and sustainable or regenerative sources. Prioritize local materials when data

reveals they have reduced impacts associated with transport.

7 Circular design. Reduce the impact over the building's life cycle and enable low-embodied-carbon future construction by prioritizing reusability, recyclability, design for disassembly, and durability.

Industry Commitments to Net Zero

SE2050. The mission of the SE 2050 Commitment is to transform the practice of structural engineering in a way that is holistic, firm-wide, project-based, and data-driven. By prioritizing the 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.

AIA2030. 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 AIA 2030 requirements are supported by SE2050.

CASE STUDIES: EC REDUCTION WITHOUT MAJOR COST INCREASES



Peter Molick Photography photo

Houston Advanced Research Center

EC REDUCTION

20%
structural and enclosure

- Structural system optimization
- Lighter overall structure
- Minimized long spans which reduced foundation requirements
- Minimized concrete slab thicknesses
- Longer strength development mixes and cement substitutions
- LEED Platinum certification

COST IMPACT

0% No cost premium



Diamond Schmitt / gh3* rendering

Toronto Emergency Medical Services Station

EC REDUCTION

- 30%**
- Lower-impact extruded polystyrene (XPS) insulation
 - Higher supplementary cementitious materials (SCM) % concrete mix
 - Low-impact concrete slab sealant
 - High recycled content steel
 - Hempcrete block instead of concrete masonry unit (CMU)
 - Recycled glass gravel insulation

COST IMPACT

0% No cost premium



Mixed Use Mid-Rise Office Building

EC REDUCTION

- 46%**
- Lower cement concrete mixes
 - Longer concrete cure time mixes
 - Polyiso/mineral wool instead of XPS
 - High recycled content steel
 - Gypsum sheathing substitution
 - Lower-carbon glazing products

COST IMPACT

0%
Premiums due to lower carbon glazing products and strategic procurement of steel

Exhibit 2 | RMI Graphic. Source: various (see endnote 5).



Implementation

Where do we go from here?

The path forward for Livable Buckhead will require a nuanced approach that addresses zoning updates for the neighborhood, marketing and messaging efforts that will support the need for and promise posed by the changes, and information about the types of materials and processes developers and building owners can use to have measurable impacts on the embodied carbon of their buildings and the neighborhood more broadly.

Workshop participants discussed the options for a performance-based or a prescriptive approach to promoting reduced carbon building approaches. While the preference of the assembled group leaned toward a performance-based regulatory approach, which will allow more flexibility in compliance measures, there was also a preference for aligning Livable Buckhead's approach with other city or industry reporting programs.

These shifts in materials and practices will take time. It is possible to start small and work incrementally and still create a significant cumulative impact.

Start early. It is important to note that waiting until the SAP process may be too late. Discussions or even a "101 primer" embodied carbon, materials, and processes should be infused into the development process early. Architects and engineers are, at times, already focusing on pathways to reduce embodied carbon in their projects, often as a matter of practice. Just as often, these same professionals may not make these important updates visible to their clients, the developers

Reducing Embodied Carbon **Vancouver, British Columbia**

The City of Vancouver is working to reduce greenhouse gases by 40-45 percent and embodied carbon by 40 percent by 2030.

Based on building typology, the City's goal is to encourage every building owner to have a plan for reducing carbon. The targets address structure, enclosure, and super structure and do not yet include operational carbon. The City includes high level figures and information in its rezoning efforts to help inform early building design to reduce embodied carbon and prepare for future compliance. At the building permit stage, more specific information and detailed figures are required.

Residential construction is the highest emitting sub-sector across most Canadian provinces, and approximately 130,000 to 224,000 new homes must be built each year to meet demand. To build more with less impact, these construction efforts need to reduce embodied carbon by 83 percent to reach their goals. Density can play an important role with these housing decisions as more dense residential development will be much more carbon efficient than lower-density or single-family homes.

Meeting tenant and buyer needs. Location, quality, price, security, and interior design influence buyer decisions. The sustainability of a structure is not yet a significant factor in the homebuying decision, and buyers are generally unwilling to pay a premium for sustainability. Designers are responding by designing efficiently and getting rid of the things people do not

typically care about but that will reduce embodied carbon without compromising a homeowner's core choices. Using this approach, designers and developers are building more efficiently, with lower embodied carbon, and at a more than ten percent reduction in cost.

In commercial settings, sustainability is more often a part of the conversation and decision making. In a similar manner, however, designers can eliminate the inefficiencies that tenants will not care about and make improvements that will reduce the embodied carbon of the building and the broader city not but impact tenant decisions.

What should be measured? Municipal leaders and designers are working to identify the most relevant measurement for evaluating the city's built environment. The current industry standard of Kg/m² may not provide the best measure as it is not applicable across all building types. There are also questions around the metrics or units that should be used to relate customer value with embodied carbon for other asset types, such as office, hotel, hospitals, and more. Is it kilograms of carbon per capita, per room, per desk or others?

Parking ratios can also play an important role in reducing the embodied carbon associated with typically concrete, elevator-served structures. Reducing parking ratios can help reduce the need for additional parking garages when new buildings come online. Cities that invest in public transit will reduce the need for more parking structures and encourage people to move to an automobile-free lifestyle.

responsible for the work. The early discussions and decisions are key to measurable reductions.

For its role, Livable Buckhead is proposing that developers submit an Embodied Carbon Action Plan at the SAP stage. Understanding that this plan will be a part of the eventual review process, developers should approach early design and engineering decisions with carbon reduction goals in clear view.

To support this approach, there may be an opportunity for ULI Atlanta, Livable Buckhead, and their partners to consider producing a localized version of [The Developer's Guide to Embodied Carbon](#) that would be tailored to the nuances of the local market.

Zoning Approaches

Workshop participants outlined the following initial recommended pathway that uses a phased approach for requiring an embodied carbon action plan in the development process.

Initial recommendation: All projects 25,000 square feet* and larger should be required to submit an Embodied Carbon Action Plan (ECAP) for SAP approval and include the following:

- Estimated A1-A3 quantities for the structure, enclosure, and hardscape materials for the project, aligned with the LEED v5 prerequisite without requiring the certification.

** Vancouver's baseline is three stories. Any building over three stories is required to submit an ECAP.*

- A narrative around the embodied carbon approach within the project, and anticipated embodied carbon reductions and strategies.

These initial ECAPs would be for reporting purposes only in these early stages. Targets would be included at a later date.

- **New construction.** For new construction projects, another submission ahead of the certificate of occupancy would be required and should include the confirmed quantities. Material environmental product declarations would also be required at this stage to demonstrate the project's achievement against target reduction estimates. This phase would also require reporting to the AIA DDX and SE 2050 national databases.
- **Building renovation.** For renovation projects, the ECAP should address salvage and deconstruction measures and potentially include a report on quantities of materials recovered or diverted from landfills. When talking about repositioning a property, when redevelopment does not make sense, building owners should target lower carbon deconstruction methods around recycled concrete, steel, and more.
- **Building interiors and tenant finish.** For projects relating to the tenant finishes, no additional submission would be required at this early stage as interior LCA standards are still being developed.

“

Material selection reduced carbon by five percent, so developers had to go back to earlier steps and back into the design phase.

–Workshop Presenter

- **Consider incentives.** Voluntary incentives, such as expedited permitting and density bonuses, could help raise the visibility and importance of carbon reduction measures. Building or layering embodied carbon into current incentive structures could help further leverage existing resources and incentives. It is also worth exploring if and how tax abatement could be leveraged for reductions in embodied carbon in adaptive reuse projects.

Developers, GCs, and design teams would all benefit from education around embodied carbon terminology and methodology, and a developer guidebook focused on embodied carbon would be very helpful to raise awareness of the topic, the challenges, and the solutions available in the market today.

Marketing

Embodied carbon has a public relations challenge: it is a complex topic that is rooted in scientific principles. While it has highly

important relevance to every person on the planet, it is a difficult topic to elevate in the public realm.

Education is the foundation for any marketing efforts designed to raise awareness of embodied carbon. The panel outlined the following steps that might assist:

- **Industry marketing.** Developers, contractors, architects, and engineers all need to be a part of the conversation and learning. Tenants also play a supportive role and are generally not yet prioritizing sustainability.
- **Residential marketing.** Individual residents should also be aware of these efforts, and marketing to this group should lead with tangible benefits that can be experienced in a reduced carbon environment and building. Messaging that uses “environmental and sustainable” may not be as universally accepted as messaging that focuses on “quality of life.” These subtle shifts in language can find broader appeal across the neighborhood.
- **Livable Buckhead.** Create a livable place in Buckhead. In many ways, Atlanta's central business district has moved to Midtown, and Buckhead is more residential than ever before. While the neighborhood is still marked by commercial and office uses, its identity as a residential neighborhood is one that could be elevated in the livability and quality of life conversations relating to embodied carbon.

- **Commercial marketing.** Messaging to developers, building owners, and tenants should focus on the business case and endeavor to not bog down in the complexities of the science.
- **Enlist partners in the effort.** Atlanta's [Southface Institute](#)—working to empower sustainable communities through advocacy, education, and services—has been a good resource for sharing information and may be a good partner in further educational efforts and marketing campaigns. Similarly, LEED has already been hard at work educating the market. It is worth exploring how low embodied carbon efforts can be layered on top of LEED's solid foundation.

Materials

The materials used in building construction are key to reducing embodied carbon and sourcing low embodied carbon materials—concrete, glass, and steel—can be challenging. Frequent barriers to sourcing center around failed specifications; early conversations and understanding of all elements and approaches is critical.

Workshop participants outlined several strategies that can assist with material sourcing.

- **Provide project-wide education.** Everyone involved with a project, from designers, contractors, developers, internal audiences, and end users should

be educated on the benefits of using low carbon materials in a project.

- **Pursue transparency.** Transparency in measures and reporting is key. Using a readily-identifiable baseline, such as the figures supplied by the Carbon Leadership Forum, can provide a reputable foundation and guidelines that partners may be more willing to align to.
- **Hold early and ongoing conversations with partners.** All project partners should understand how the low-carbon material selections are working within the pro forma, project-wide strategy, and overall cost is important. These conversations will also support project transparency.

There is a recognizable “flight to quality” in the office market in this post-COVID era. It is important to understand what that means to all user groups and identify how the use of low carbon materials can assist in producing high-quality projects that will be desirable in this market.

As one panelist noted, moving to reduced embodied carbon has an important impact on the broader embodied carbon conversation. “Just do it and promote it, because it works.”

There is also consensus that there is more alignment between younger generations' values and their decision making. These values often include a more sustainable and lower carbon environment and will, over time, positively improve uptake in the materials market.

Embodied Carbon and Cross-Laminated Timber

Susan Jones and her firm, atelierjones, have been leaders in the mass timber movement in the United States since 2012. Jones's work and the related code changes it required led her to assist the AIA with new national codes for mass timber projects. Today, these new codes can be adopted in any jurisdiction.

Jones's projects over the years point to the evolution in her practice, in building practices using cross-laminated timber (CLT) construction, and in the industry's understanding of sustainable materials sourcing.

Through her first CLT project, CLT House, Jones found that total costs were eight percent more using CLT at the time. Her more recent project, Heartwood, was able to use design approaches with "similar costs." While using CLT did not result in cost savings for that project, it did not cost more. Jones also found that prefabrication on CLT projects can accelerate the build and help reduce costs.

Jones also emphasized that measurement and data can translate right back to board foot and to the tree and the forest. These measurements can assist the industry in realigning discussions around the use forests and a new approach that is more ecologically sustainable.

Heartwood 1323 East Union Street, Seattle

Project cost: \$28.5 million

Building size: 67,000 square feet, 8 stories

Floorplates: 8,500 sf floorplates (estimated)

Units: 126 units averaging 400 square feet

Parking: The area is well-served by transit and the developer was not required to build parking.

Affordability: 60-120 percent of area median income, which is workforce housing in Seattle

Financing: Conventional loan and private equity that was interested in supporting the workforce housing pursuit and a mass timber project. (No public funding.)

The building's design resulted in an environment that is net-negative at three percent. Design features in the building left the mechanical elements exposed. Waste from stair tread

construction was used to make sculptures for the lobby. The windows are triple-glazed.

The design and endurance of the building is similar to the heavy-timber buildings in the older parts of the city. The cross lamination of the glue laminated timber actually shrinks less than heavy timber, and the building was rated for 100 years by the insurance industry.

The design team conducted an end-of-life LCA for the building after 100 years. After 200 years, it could be ground down and made into particle board that could be used in construction for another 40 years and then reused for another 40. There was a ten percent mass timber loss across the entire calculation and 380 years of total life derived from the building materials.





Next Steps

Across the United States, individual communities and municipalities are leading the efforts to reduce embodied carbon. While state and federal agencies may need time to clarify their roles in the efforts, a number of cities are already hard at work, leading conversations and supporting efforts to raise the visibility and importance of a reduced carbon environment. This work is elevating improvements in constructions processes, building technologies, and other innovations that will help reduce carbon in the built environment and have lasting positive impacts on the climate.

Through previous ULI Atlanta mTAP engagements and these workshops with industry leaders from across North America, Livable Buckhead is charting a new path forward for the neighborhood, recognizing where and how it can encourage more sustainable and lower embodied carbon buildings across its geography. At this stage, the primary intervention point for an embodied carbon action plan is at the SAP phase, which is the space in which Livable Buckhead has its strongest levers.

Going forward, Livable Buckhead is encouraged to pursue the following recommendations from these combined workshops and studies:

- **Pursue a embodied carbon ordinance for Buckhead.**
- **Start with baseline reporting.** Begin the assessment process by asking building owners to share information about what they have in place today. Building owners

should be asked to report present quantities and be alerted to a future publishing feature of those figures. This approach encourages better purchasing decisions in the near term. A narrative request at the DRC/SAP phase is also a good place to start as it encourages developers to start thinking about three or four measures they can analyze.

- **Increase requirements incrementally.** Consider a stepping mechanism to move owners into understanding and embracing lower embodied carbon measures.
- **Start requiring EDPs for purchases.** Early requirements should also include the submission of at least three EDPs for major purchases.
- **Consider an existing optional code.** The American Concrete Institute's low-carbon concrete code (ACI CODE 323-24) has been written for municipalities and can be adopted it separately or used as a model for a similar approach.
- **Consider a whole building assessment.** Although a whole building assessment, similar to what Austin Energy Green Building has in place, may be too much right out of the gate for most projects, it could be used on the largest projects in Buckhead.
- **Use early lifecycle assessments.** A whole building lifecycle assessment, which gets to the ideal number at the outset of a project, could provide a good

starting point and may be more readily acceptable over starting with the science of embodied carbon. Terminology is important and shapes perception, which is reality for most.

- **Consider tenant buildouts.** The number of new towers going up in the neighborhood is minimal, but there are entire floors that are being scraped and renovated every five to ten years, and all of it is going into a landfill. At present, there are no requirements around what happens to those materials. With a significant inventory of existing buildings and potential renovations, the neighborhood will also need to consider these new tenant buildouts and how those construction activities and related carbon impacts should be addressed.

Recommendations regarding education and messaging include the following:

- **Provide education early and often.** Early information is key to integrating reduced embodied carbon practices and materials into a building's design and achieving maximum results and similar or lower costs.
- **Establish and employ a flexible messaging plan.** Communication and messaging matters and should be able flex and adapt, depending upon the interests of the particular audience at hand. Messaging to neighbors will look different than messaging to construction managers.

- » It is a climate story for those who care deeply about the climate.
- » It is an economic story for those who make decisions based on the economics of a project.
- » Consider potential examples and what may resonate with each audience. The effects of smog for a hospital development may be more resonant and impactful than focusing directly on embodied carbon facts and figures.
- » Embodied impacts can be framed through a lens of “sustainable” processes. Other words that may resonate include “conservation” and “efficiency.”
- » Discover and understand what is important to the decision makers at hand and craft the dialog toward their areas of interest.

- **Address the narrative.** Encourage early and frequent conversations around reduced embodied carbon measures. Ask developers, architects, and engineers what they are doing now, today, to reduce their embodied carbon
- **Partner and collaborate across the industry.** There are a host of potential partners for the messaging, educational, and ordinance drafting work ahead, including ULI, AIA 2040, SE 2050, and the Carbon Leadership Forum. It takes focused attention to change systems away from business as usual and the work should begin now.

Reducing embodied carbon in Buckhead's built environment is an important topic that can quickly become highly technical. The EC reduction process can and should be woven into every aspect of the building lifecycle, starting early with design and only ending when the building is deconstructed and

materials reach the end of their useful form. From the civic engineers who lay pipe in underground systems to the interior designers who select the materials for final tenant buildout, everyone has a role to play in selecting low or lower-carbon options and moving to processes that will reduce embodied carbon and support a more sustainable and livable environment.

Across the sunbelt, municipal leaders and private sector partners in Nashville, Raleigh, Charlotte, and Austin are working hard to enact carbon reduction measures that will positively impact their communities and ultimately provide more livable environment for those who call those cities home. It is time for Atlanta to do the same.



Appendix

The following pages contain additional resources, lists, and links provided by NZI workshop presenters. While in no way exhaustive, these resources may prove helpful in assisting Livable Buckhead and its constituents with initiatives to incorporate low-embodied carbon and zero carbon products and processes into their work.

Guidebooks

Austin Energy Green Building Ratings –
[Guidebooks and reference documents](#)

National Council of Structural Engineers
Associations, Sustainable Design Committee
– [Performance-Based Concrete Specification
Guidance: Concrete Class Table](#)

Educational opportunities

Carbon Leadership Forum (CLF) – [Embodied
Carbon Policy Series](#)

Informational resources

Architecture 2030 – [Why the Built
Environment](#)

US Green Building Council and RMI – [Driving
Action on Embodied Carbon in Buildings](#)

Tools and calculators

[EC3 Tool](#) is The Embodied Carbon in Construction Calculator (EC3) tool is a free and easy-to-use tool that allows benchmarking, assessment and reductions in embodied carbon, focused on the upfront supply chain emissions of construction materials.





Embodied Carbon

Policy Approaches for Austin's Built Environment

February 2025



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History and Mission

Austin Energy Green Building developed the first rating system in the U.S. for evaluating the sustainability of buildings, creating a model for many other cities as well as the U.S. Green Building Council's LEED certification system.

Since 1991, Austin Energy Green Building has provided:

- Building ratings
- Education and outreach
- Advocacy and planning

Mission

To cultivate innovation in building and transportation for the enrichment of the community's environmental, economic and human well-being



Why Build Green?

- Buildings account for 40% of energy use in the United States
- Americans spend 90% of their time indoors, where pollutants can be two to five times more concentrated than outdoors. Our environment has more influence on our health than our genes, habits and access to medical care - combined!
- Sustainable practices support equity, the environment and the local economy.





AEGB Ratings

A project earns points from sustainability measures that determine its star rating.

10 Basic Requirements

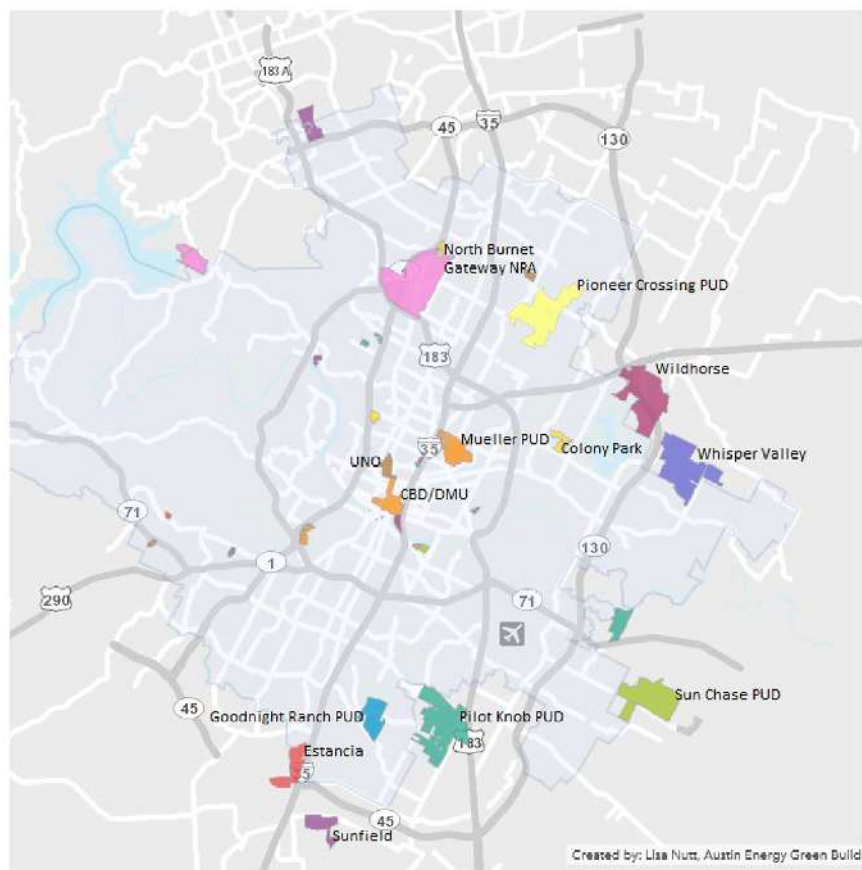
35 – 44 pts 2 Star

45 – 54 pts 3 Star

55 – 74 pts 4 Star

75 pts or more 5 Star





Development Agreements

The City of Austin fosters high-performing and sustainable buildings by including AEGB ratings as part of zoning.

- Central Business District: ★
- Downtown Density Bonus Program: ★★
- Rainey Street District: ★
- Mueller: ★★
- Domain: ★★

Austin Energy Green Building Ratings

Austin Energy Green Building (AEGB) rates new construction and major renovation projects for three markets



Theresa Passive House

Single Family

Production and Custom Homes

20,927

17.3 K Austin | 3.6 K Extended Area



Travis Flats

Multifamily

Residential < 8 Stories

229

49.8 M sq. ft. | 43.6 K dwelling units



Elizabeth Branch Park Pavilion

Commercial

and Residential > 7 Stories

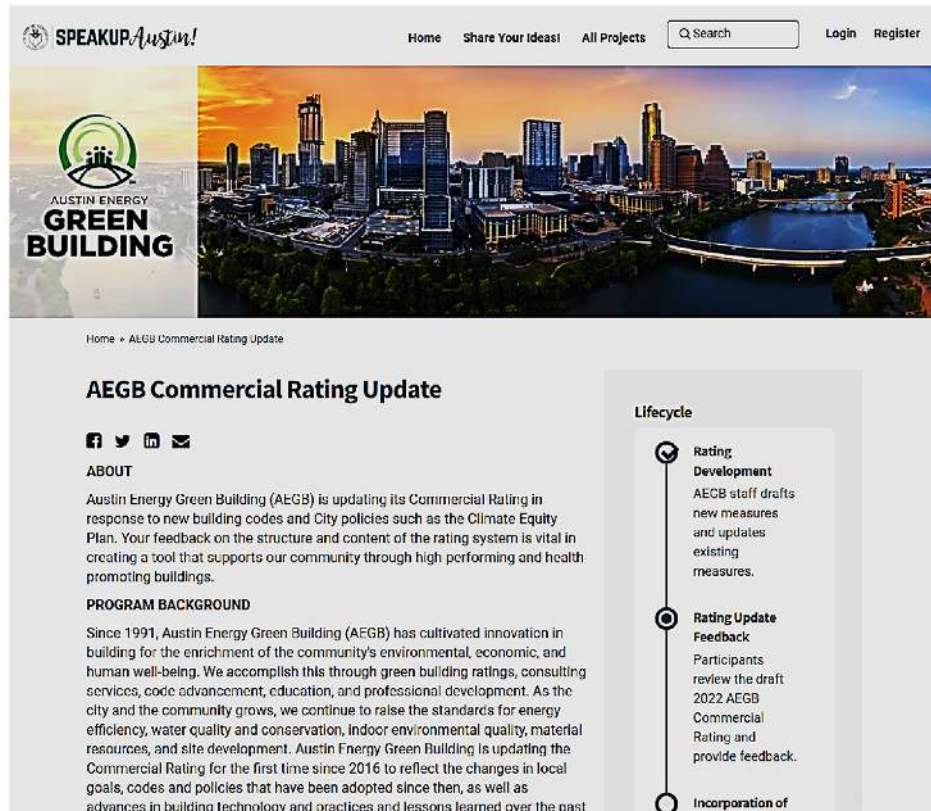
397

59.4 M sq. ft. | 15.9 K dwelling units

21,573 rated projects

total reported from FY1993 - FY2024





Responding to Community Feedback

AEGB used the **Speak Up Austin** platform to gather input on drafts of the rating update.

Public comments guide edits and additional content for the rating.





Beyond a Checklist

Responding to the challenges of our times, we have charted a path forward toward an adapted future for Austin.

We are exploring new paradigms around:

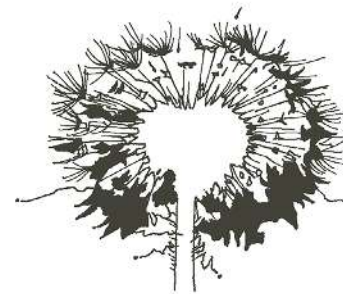
- Climate
- Health
- Equity



Rating System Alignment

AEGB provides local guidance for global sustainability initiatives.

AEGB, LEED, WELL, TRUE, SITES, the Living Building Challenge, etc. all work together to empower the industry to do our best work.



INTERNATIONAL
LIVING FUTURE
INSTITUTESM



AEGB Commercial Team



Design

- Consults on the design of the building to ensure sustainability goals and strategies align

Construction

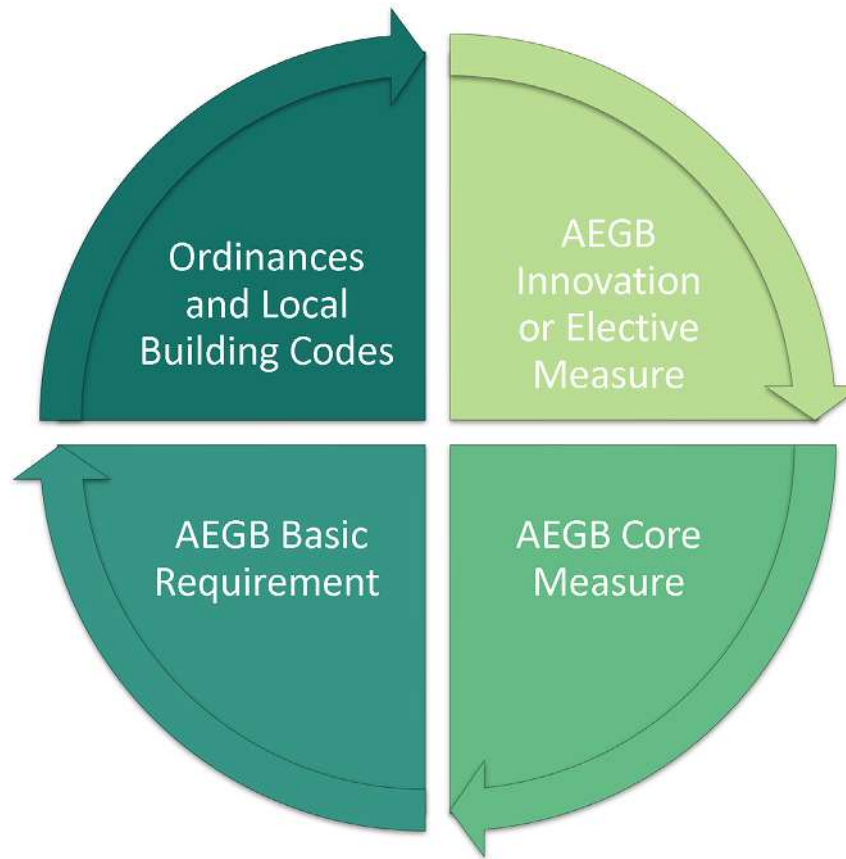
- Tracks the implementation of sustainability initiatives throughout construction and performs site visits to projects

Operation

- Ensures the building is set up for success in building maintenance and operations through planning and training



Innovation to Market Transformation



AUSTIN CLIMATE EQUITY PLAN



AEGB Rating Intent: To garner participation to meet community-wide local sustainability goals for the City of Austin.



Core Measures

(70pts/NEW)

These measures within the rating system are:

- Curated green building strategies that are **essential considerations if the City of Austin is to meet its sustainability goals**
- Available to **typical buildings**



Origin Hotel Mueller

AEGB Rating Intent: To reward green building strategies that may only be available or appropriate for certain building sites or types.



Elective Measures

(Up to 25pts/NEW)

- This measure category includes **familiar measures** that may only be available or appropriate for certain building types or sites
- Sustainability strategies implemented in the pursuit of **multiple rating system certifications** receive **point reciprocity** in this category

Examples: Vulnerability Preparedness Assessment, Art, On-site Water Storage, Ozone Laundry



AEGB Rating Intent: To develop innovative and creative solutions that demonstrate a comprehensive approach and achieve exceptional and quantifiable environmental and/or health benefits beyond the requirements of measures defined in the rating system.



Innovation Measures

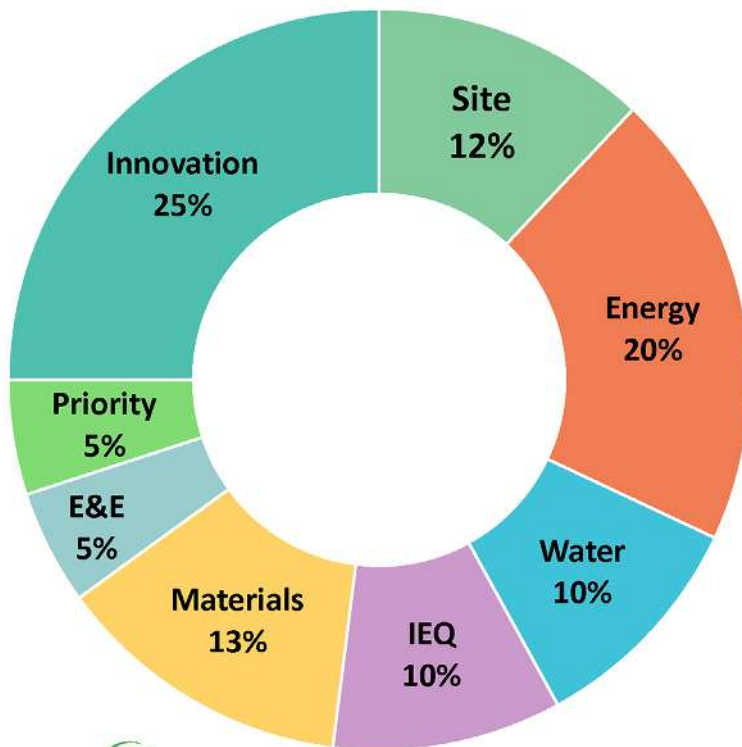
(Up to 25pts/NEW)

- Highlight new technologies and showcase exceptional design and achievement
- These measures must be significantly beneficial, replicable and measurable
- **Submit a proposal** with the intent, requirements, documentation to demonstrate compliance and the design approach used
- Innovation measures are now included directly within the Commercial Guidebook

Examples: Water Monitoring and Leak Identification, Dynamic Glazing, Restore Soil Health, Shelter In Place

2022 Commercial Rating

Points Availability



Categories	Points
Integrated Design (Team)	0
Site	12
Energy	20
Water	10
Indoor Environmental Quality (IEQ)	10
Materials	13
Education & Equity (E&E)	5
Priority	5
Innovation	25
Total	100





MATERIALS and RESOURCES - EMBODIED CARBON

Materials Quantities (Basic Requirement)
Environmental Product Declarations (Core)
Lifecycle Assessment (Core)
Construction and Demolition Waste (Core)



Mary Elizabeth Branch Park Pavilion



© Leonid Furmanskyy

AEGB Rating Intent: To enable the City of Austin to establish an embodied carbon baseline of the local building stock.



Materials Quantities

(NEW)

- Report the quantities of **concrete, metal, wood, insulation, gypsum board, acoustical ceiling tile, resilient flooring, carpet and glass** used to construct the building
- Calculate the **global warming potential (GWP)** of the various materials
- Use **design phase estimates** to identify materials with the greatest GWP
- Use **purchased quantities** to true up the calculation and account for waste

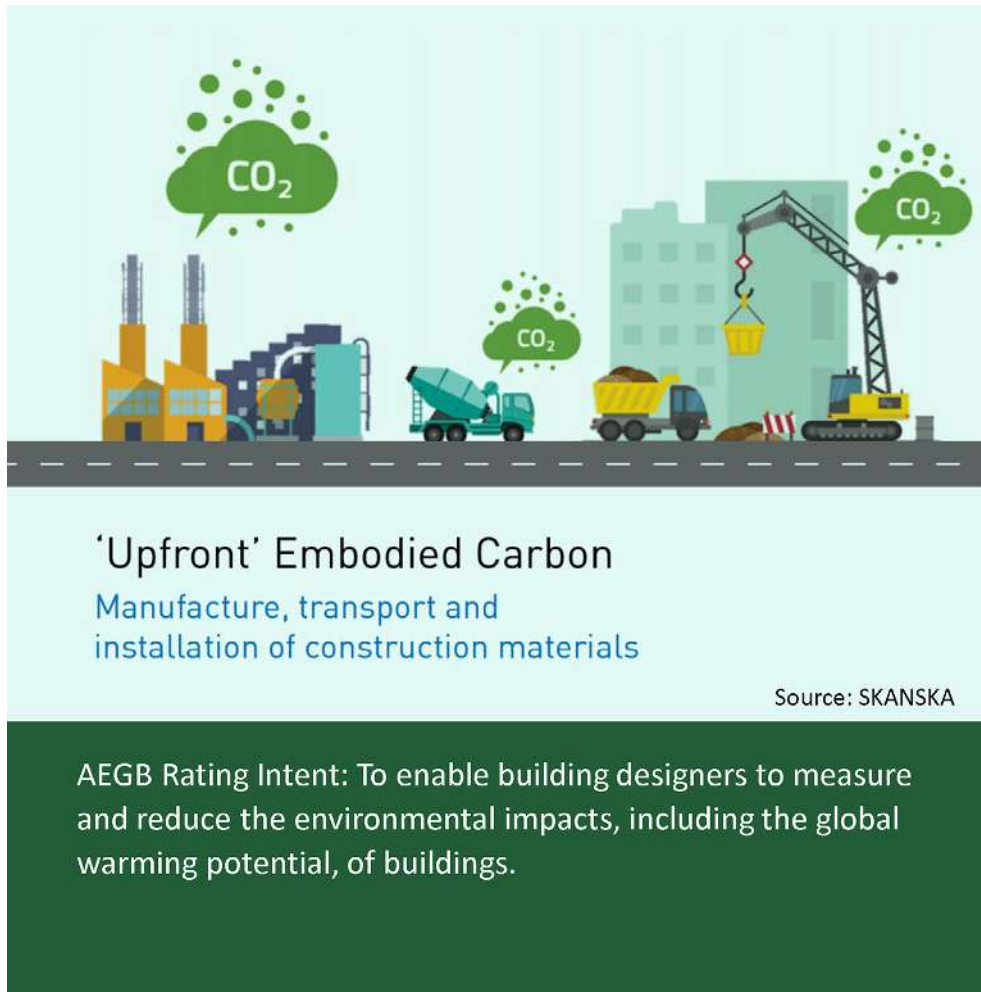


AEGB Rating Intent: To enable building designers to select specific materials that reduce the environmental impacts, including pollution and the global warming potential, of buildings through material ingredient impact transparency by manufacturers.

Environmental Product Declarations

(3 pts/NEW)

- Provide product-specific Environmental Product Declarations (EPDs) for any of the following building materials:
 - **All functional concrete** (1 pt)
 - **20%** of the construction materials by cost or Global Warming Potential (GWP) (1 pt)
 - **40%** of the construction materials by cost or GWP (2 pts)



Lifecycle Assessment

(5 pts/UPDATED)

- Lifecycle assessments (LCAs) provide the environmental impacts of a building
- Conduct an LCA for the following building components or that demonstrates a reduction of global warming potential (GWP):
 - Structure OR Enclosure (1 pt)
 - Structure AND Enclosure (2 pts)
 - 5 – 20% GWP Reduction (3 - 5 pts)
- The **Austin Climate Equity Plan** has set a target for **all new construction to be 40% less carbon intensive by 2030**



AEGB Rating Intent: To encourage accuracy, transparency and reliability in the circular economy; end-of-life usage of building materials; and reduce demolition waste destined for the landfill or incineration facilities by salvaging materials or designing buildings to enable salvaging materials.

Construction and Demolition Waste

(3 pts/UPDATED)

- For whole buildings, dispose of **less than 2.5 pounds per square foot** to the landfill or incineration
- Use an **RCI certified hauler** for at least 90% of the Construction and Demolition (C+D) waste
- **Deconstruct** the building previously onsite
- **Design the building for reuse** by enabling non-destructive disassembly
- Coordinate **CWM Recycling for Tenants by using a single hauler**
- Prevent waste by **leaving out Tenant Slabs**



Building the Future Together

Near term initiatives include:

- **Local Whole Building Embodied Carbon Probabilistic Baselines**
- **Lower Carbon Concrete Plan for Municipal Capital Improvement Projects.**
- **Emerging Deconstruction Focus**
- **Establishing carbon as a common reporting metric for programs, which would open the door to more types of incentives for embodied carbon reductions**





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Austin Energy Green Building Ratings

<https://www.greenbuildingsystem.austinenergy.com/Login/Help.aspx>

Carbon Leadership Forum (CLF)

<https://carbonleadershipforum.org/embodied-carbon-policy-educational-series/>

Architecture 2030

<https://www.architecture2030.org/why-the-built-environment/>



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Thank you to everyone who participated in these conversations about the future of the built environment in Buckhead.

