EWING COLE

SEI STRUCTURAL ENGINEERING INSTITUTE ASCE

SE2050 COMMITTING TO NET ZERO

EMBODIED CARBON ACTION PLAN

YEAR 4 - 2025

ARCHITECTS
ENGINEERS
INTERIOR DESIGNERS
PLANNERS

Abington Jefferson Health, Asplundh Cancer Pavilion, Biophilic Design

EwingCole, NY Office

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EWINGCOLE'S COMMITMENT

EwingCole, a 400+ person, interdisciplinary firm with nine offices located across the country, is hereby signing on to the SE 2050 Commitment Program. We support the vision that all structural engineers shall understand, reduce, and ultimately eliminate embodied carbon in their projects by 2050.

The places where we live, work and play represent the largest source of greenhouse gas emissions in America, as well as around the world. The design and construction industry has made significant strides toward creating high performance buildings, of all types and uses, by deeply reducing operational energy use and improving efficiency. As a result, the industry is positioned to have a profound impact by now committing equal focus to reducing the embodied carbon of building materials, therein reducing building related greenhouse gas emissions globally.

As engineers and architects, we understand the need to exercise leadership in our role in creating the built environment. Consequently, we believe we must alter our profession's actions and encourage our clients and the entire design and construction industry to join with us to change the course of the planet's future. Altering current practices of design and construction to realize significant reductions in embodied carbon aligns with our commitments to tracking and improving upon building energy performance each year, and to selecting building materials that support health, equity, and ecosystems around the globe.

Our commitment to SE 2050 is a multi-year, continuous improvement effort that begins with growing our understanding of embodied carbon reductions, improving our project workflows, and meeting SE 2050 program requirements for tracking and reporting.

We look forward to joining this coalition and industry effort to achieve the goals of the SE 2050 Program.

Respectfully Submitted,

EwingCole SE 2050 Committee, in partnership with Thrive@EC

Robert A. McConnell, AIA
President

Paul Constantini, PE, SE
Principal – Director of Structural Engineering

Colleen Blackwell, PE,
Principal, SE 2050 Embodied Carbon Reduction Champion

Maria R. Papiez, AIA, NCARB
Director of Sustainable Design

"WE HAVE BEEN FOCUSED ON SUSTAINABILITY FOR DECADES. IN THE PAST, THE FOCUS WAS ON ENERGY CONSERVATION, LONG-TERM OPERATIONAL AND LIFE-CYCLE COST REDUCTIONS AND SUSTAINABLE MATERIALS AND RESOURCE MANAGEMENT. **NOW WE NEED CONCERTED ACTION TO ELEVATE THE CONVERSATION AND CONSIDER THE GLOBAL COMMUNITY.** WE NEED TO ENGAGE IN REDUCING CARBON EMISSIONS AND THE IMPACTS OUR BUILDINGS HAVE ON GLOBAL WARMING."

- Robert McConnell, AIA
President, EwingCole

ewingcole.com

City of Hope Medical Center, Amini Transfusion Medicine Center, LEED-NC Silver, 2009

01 | OUR MISSION

WHO WE ARE

WHAT WE DO

We explore and design inventive solutions to complex projects that better our clients' everyday life, our community, and our world. Our clients are leaders in their respective industries. We partner with them to bring the latest thought leadership to each project, and to deliver buildings, spaces and places that advance their mission. Our diverse group of professionals take that responsibility seriously. As their trusted advisors and stewards of responsible design, we are always looking for opportunities that enable us to make a positive impact.

HOW WE DO IT

We bring together research, creativity, and technology through a rigorous process to create places where people live, learn, heal, work, and play. Design is an iterative and interactive process that works best when ideas are measured, discussed and challenged. Our process is informed by a deep understanding of the program, the site, and the science of buildings, but it starts with the need to discover a project's full potential. Our expertise, knowledge and resources are most effective when we listen to one another, work with one another, and learn from one another.

Our common vision is to transform every day buildings and landscapes into meaningful experiences.

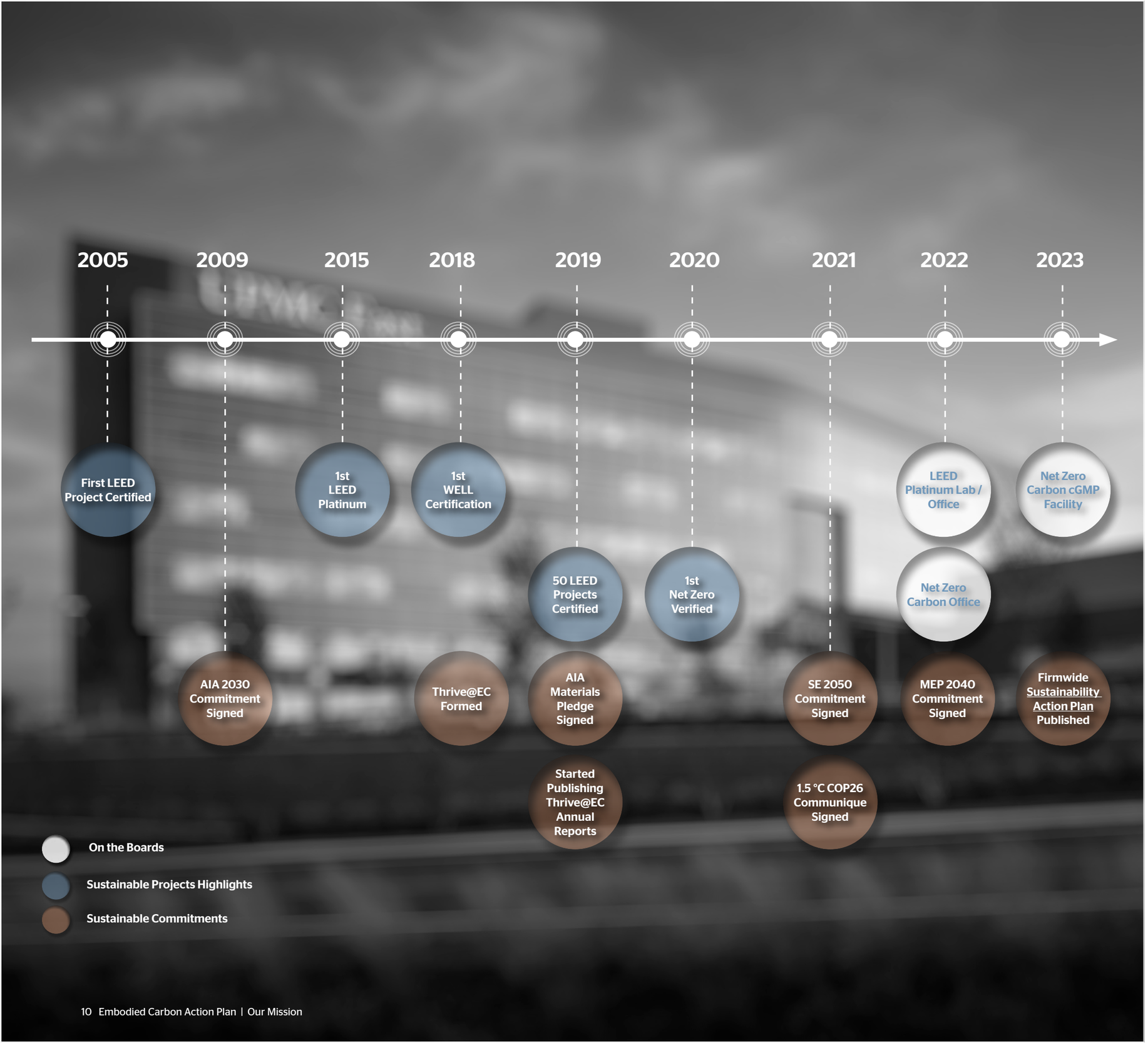
WHY WE DO IT

Our vision is to design places that elevate the human experience; our goal is to build a design culture that can transform the most common buildings and landscapes into meaningful experiences. We believe that great design emerges from a visionary response to an everyday need. The places we design are used by people in all walks of life, yet each design must reach beyond the ordinary. Our collective journey requires that we challenge ourselves to ask the right questions and search for the right responses. We nurture a work culture that values and cultivates these ideas.

WHAT WE VALUE

- Collaboration
- Communication
- Creativity
- Innovation
- Social Responsibility
- Investing in the Future

We are committed to creating a studio culture that fosters professionalism, creativity, communication, positive energy, and mutual respect. When our people are equipped to work at their fullest potential, we can live out and realize our philosophy of "innovation through partnership".



CONNECTION TO VALUES

We believe that human wellness depends on the health of the environment that surrounds us.

This belief grows from our desire to deepen our connection to the communities and ecosystems in which we design, as well as from our professional responsibility to protect health and wellbeing. We are rooted in the core principles of sustainability - equity, environment, and economy - locally, regionally, and globally.

Starting from this value-based foundation, we are motivated to create places where all of nature (planet & people) can thrive. These are places that reach beyond the ordinary, and that are elegant and broad in their positive influence.

Our collective journey requires that we challenge ourselves to ask the right questions and search for the right responses. We nurture a work culture that values and cultivates these ideas, striving toward a built environment that is in alignment with the health of our communities and the planet.

Our world-class engineers and architects understand the need to exercise leadership in our role in creating the built environment. Altering current practices of design and construction to realize significant reductions in embodied carbon aligns with our commitments to tracking and improving upon building energy performance each year, and to selecting building materials that support health, equity, and ecosystems around the globe. As a firm, these four commitments – SE 2050 Commitment, AIA 2030 Commitment, MEP 2040 Commitment and AIA Materials Pledge – frame our accountability for deep reductions in operational and embodied carbon emissions and keep us focused on the core principles of sustainability – equity, environment, and economy.

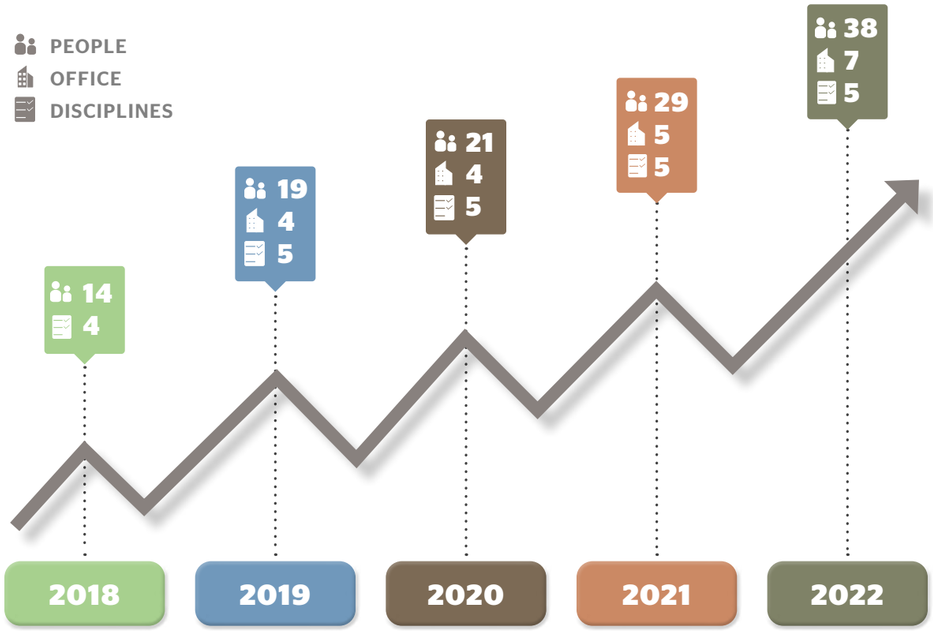
THRIVE@EC

Thrive@EC's mission is to build sustainability resources and education to support projects and operations.

Thrive@EC brings together subject matter experts and sustainability-oriented professionals from multiple disciplines to collaborate across office regions. Formalized in 2017, the group has expanded to include representatives from most of our practices, disciplines, and offices.

Thrive@EC works in interdisciplinary focus groups to explore and develop new content for firm use, lead initiatives that advance our sustainability goals, and organize education sessions and other opportunities to share developments. Primary focus groups include:

- Building Enclosure & Structure
- Energy & Systems
- Materials Health & Carbon
- Sustainability Commitments



02 | SE 2050 VALUES

EDUCATION

LOOKING BACK

LEADERSHIP

EwingCole signed onto the SE 2050 Commitment in September of 2021, creating a dedicated SE 2050 Committee. This committee works together with EwingCole's multi-office and multi-disciplinary sustainable design committee, Thrive@EC, to develop and implement actionable sustainability goals. Some of our goals have been to identify topics for continuing education and develop educational resources for the firm, and to serve as the lead sustainable design personnel on projects pursuing sustainability. During the first two years of participation in the Commitment we developed a series of internal continuing education webinars that introduced the firm to our four guiding commitments - AIA 2030, AIA Materials Pledge, SE 2050, and MEP 2040 - which included topics such as, embodied carbon, operational carbon, and life cycle assessment. We have compiled sustainable design resources from SE 2050, AISC, NRMCA, and product manufacturers that are hosted on our internal Microsoft Teams Commitment page and shared with our employees.

EDUCATION

During the past year, our SE 2050 Committee has been conducting research into ways to improve our concrete, masonry, steel, and wood specification language to incorporate a base level of sustainability into all projects. We have hosted webinar viewings with the structural engineers across our offices addressing these topics. Some sources of these webinars have been the NRMCA, OneClick LCA, the NCMA, and WoodWorks. Through these resources we have been able to begin editing our specifications to request EPDs for all structural products, and provide parameters for recycled content for structural steel products.

We have also worked with our firm's recently formed Sustainability Department, through a series of discipline focus groups, to better understand how our engineers' expertise can be tapped earlier in a project's design to help set the project up for sustainability success from the beginning. Through this process, the Sustainability Department created a Design Performance Process Map to help define firmwide expectations for all design decisions, including sustainability decisions, through each phase of a project. We began working on educational sessions for our engineers to learn how structural design decisions will fit into this process map, with the plan to complete and begin implementing them in 2025.

LOOKING FORWARD

COLLABORATION

Members of EwingCole's SE 2050 Committee will continue to collaborate with the other sustainable design committees and working groups to develop short format education sessions and reference documents as required to communicate the firm's sustainability goals. The goals identified in 2024 for incorporating "best practice" sustainable design choices into our modeling templates is still underway and set to be completed by the end of 2025.

ONGOING TRAINING

Embodied Carbon education and development of best practices for building design are an ongoing process to which the SE 2050 Committee is dedicated. External continuing education presentations are an excellent platform to further educate our engineers on the trends emerging in each material sector of the construction industry. Whenever available, these education opportunities are shared with our structural engineers, and with the whole firm when applicable.

Identifying lessons learned from our projects as more and more are incorporating low embodied carbon design requirements will be an important way for the firm to guide design for future projects. These lessons learned can be shared as case studies with the firm, and inform how we can communicate the impacts of design decisions to our clients.

Smithsonian Institution, National Museum of Natural History Q?Rius, The Coralyn W. Whitney Science Education Center, LEED-CI Silver, 2015

Keller Army Community Hospital, Brian D. Allgood Clinic Addition, LEED-NC Certified, 2019

REPORTING

LOOKING BACK

Last year, our SE 2050 Committee had a number of goals that were set in EwingCole's firmwide Sustainability Action Plan (SAP).

- Establishing a company baseline GWP from which we can set specific targets for improved project performance
- Performing a Structural LCA on a minimum of 5 projects that year
- Reporting structural material quantities to the SE 2050 database for all major projects

GWP BASELINES

We have made significant progress towards establishing a company baseline GWP by using Tally to analyze Revit models from our catalog of past projects; we have modeled a total of (12) projects across (6) different market sectors to date.

EwingCole has built an internal Sustainability Database as a repository to document and track progress on all our sustainability commitments. This internal database allows us to upload project-specific data and visualize the carbon emissions improvements that need to be made each year until 2050.

WHOLE BUILDING LCA

This year we further refined and clarified the language and our goals around LCA modeling. We learned where we needed to further define our reporting parameters to be able to reach established targets. Project eligibility was one core parameter, and we built a better understanding of how to identify projects in each of our market sectors that meet criteria. The next parameter was defining the difference between our firmwide goal to perform more WBLCA engaging all design disciplines, and our SE 2050 specific goal to perform LCA on building structures. While our firmwide WBLCA modeling ramps up, our SE 2050 Committee has been able to identify a number of our new projects that are eligible for structural LCA, of which a total of (5) were performed this past year.

STRUCTURAL QUANTITIES

Last year, our team identified projects that would be completing the construction documents phase in 2024 as the most applicable for calculating structural material quantities. Moving forward, we are considering how to incorporate the inclusion of structural material quantities accounting when LCAs are performed in earlier phases of a project.

Department of Veterans Affairs, Outpatient Clinic, LEED-NC Silver, 2014

WakeMed Health & Hospitals, North Family Health & Women's Hospital , LEED for Healthcare Gold, 2018

REPORTING

LOOKING FORWARD

LCA REQUIREMENTS

Our SE 2050 Committee members have used Tally to perform all of the structural Life Cycle Assessments this past year by pulling in the materials used from the project Revit models. Through this process we have gained a significant amount of knowledge of how to use Tally and what its limitations are. We have also defined the scope boundary for the level of detail that a structural only LCA would seek, versus a WBLCA that may require additional consideration of finishes and assemblies attached to the structural elements in the Revit model. In order to streamline the LCA process, this year the SE 2050 Committee, along with members of our Building Enclosure & Structure Focus Group within Thrive@EC, will be working on LCA guidance documents that will address the following:

- Outline the process for determining project eligibility for an LCA
- Define the scope of what to include in the LCA
- Explain when and how to perform the LCA during the different project phases.

IMPROVING PERFORMANCE

Additional goals we have planned for 2025 include, continuing the ongoing efforts started with our goals for 2024, and aspiring to take a leap forward with continued improvement on those goals. Specific items that have been outlined in EwingCole's firmwide SAP include the following:

- Identifying a handful of projects that will attempt to achieve a 10 percent reduction in GWP from our established baseline
- Perform WBLCA on 25 percent of this year's active projects
- Continue running Structural LCA on a minimum of (5) active projects

In order to achieve these goals we will work closely with the leaders of our other commitments to determine an appropriate company baseline, and identify candidate projects for performing life cycle analyses.

We will continue to use Athena Building Impact Estimator for concept and schematic level designs before a robust Revit model is created. Once Revit models are populated during the design development phase, we will continue to use Tally to run Life Cycle Assessments from the models, and the EC3 database to help refine specific material selections based on sustainable performance. This year members from Thrive@EC will test the capabilities of OneClick LCA to compare its limitations to those of Tally to make software determinations for the future.

Wake Forest University, Wake Downtown Science Building, Adaptive Reuse

Wake Forest University, Wake Downtown Science Building, Adaptive Reuse

Anne Arundel Community College, Andrew G. Truxal Library, LEED-NC Gold, 2013

ADVOCACY

EDUCATION

REDUCTION STRATEGIES

REPORTING

REDUCTION STRATEGIES

LOOKING BACK

EwingCole has worked with many clients seeking LEED design standards in the past and continues to foster client relationships centered around the incorporation of sustainable design practices. The structural design team has participated, and will continue to participate, in new project design charrettes.

SPECIFICATIONS & INDUSTRY PROGRESS

Our firm's structural concrete and steel specifications have been updated to include embodied carbon performance criteria (GWP, recycled material content, etc.), including the requirement for submission of Type III Environmental Product Declarations. We have also updated the language in our general notes to incorporate the NRMCA regional GWP benchmark values by concrete strength. We have had a handful of projects enter into construction with these sustainability requirements incorporated and have had about (6) projects across the United States successfully meet all of the data submission requirements, including EPDs. While we have started seeing success with more product manufacturers producing EPDs, many of the products, especially concrete mixes, have not yet been able to meet the GWP benchmark targets we have specified. Many of our projects have still not been able to meet these requirements, particularly for concrete mixes. We hope to see more improvement in this area as contractors and suppliers become more accustomed to these sustainability requirements.

PROJECT HIGHLIGHT

A recent sustainability success story involved the adaptive reuse of two 1980s-era buildings to meet our client's current laboratory research needs, and allow for future flexibility to support bench and pilot scale research. Through the early design phases, the design team identified an approach to renovate and retrofit two buildings within the client's existing portfolio. The two buildings are each one story, totaling over 60,000 square feet of area. The existing buildings' structure was comprised of a light frame wood roof, with interior steel braced frames for lateral load resistance, and the facade consisted of load-bearing precast concrete wall panels. The client also requested that we perform a voluntary Lateral Force Resisting System (LFRS) retrofit and upgrade to bring the buildings into compliance with ASCE 7-16 seismic load criteria. Most of the original envelope and structure remained in place, with only selective areas of slab on grade and roof framing demolition as required to incorporate the LFRS retrofit. The client set an 85% construction and demolition waste diversion goal for the project, with a goal to have a zero-waste campus by 2029. The project achieved an 86% diversion rate. The client and design team wanted to understand the Embodied Carbon savings realized by retrofitting the existing buildings and retaining the majority of the existing structural members instead of building new with the same scope. Per early estimation using CARE Tool, a reduction in embodied carbon of just over 50% was predicted. Per detailed estimation using Tally, a reduction in embodied carbon emissions of about 41% was realized in comparison to theoretical new construction.

LOOKING FORWARD

EwingCole's Embodied Carbon Reduction Strategies will be ever evolving as our firm develops its understanding and implementation of embodied carbon reduction. This year the SE 2050 Committee will continue to collaborate in an internal focus group with members of our firm's three other framing commitments to help guide our projects in implementing sustainable design best practices as a baseline, and work towards more specific reduction goals.

PROJECT AND PROCESS INCORPORATION

Some of our goals from last year that are still being worked on and we hope to have completed by the end of 2025 include the following:

- Updating our Revit templates to support consistent material integration in Tally

The firm's early design guidance documents have been updated to include considerations for embodied carbon from design onset, and training sessions for the project leads involved in early design decisions are planned for this year.

2025 GOALS

Our goals for 2024 include the following:

- Update sustainability metrics in our miscellaneous concrete, masonry, steel, and wood specifications
- Develop a Biogenic material resource guide detailing the design criteria for when and how biogenic materials can be included in projects.

2026 & BEYOND

Looking beyond 2025, EwingCole has outlined a number of longterm goals in our firmwide SAP.

- Grow our portfolio of mass timber projects
- Encourage clients to pursue enhanced sustainability goals striving for net-zero carbon structures by 2030
- Specify products with EPDs that can make a 30% improvement of GWP over the company baseline
- Develop design resource guides and specifications for designing structures for disassembly.

UPMC, UPMC East Hospital, LEED-NC Silver, 2012

Geisinger, Hospital for Advanced Medicine, LEED-NC Silver, 2011

ADVOCACY

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REPORTING

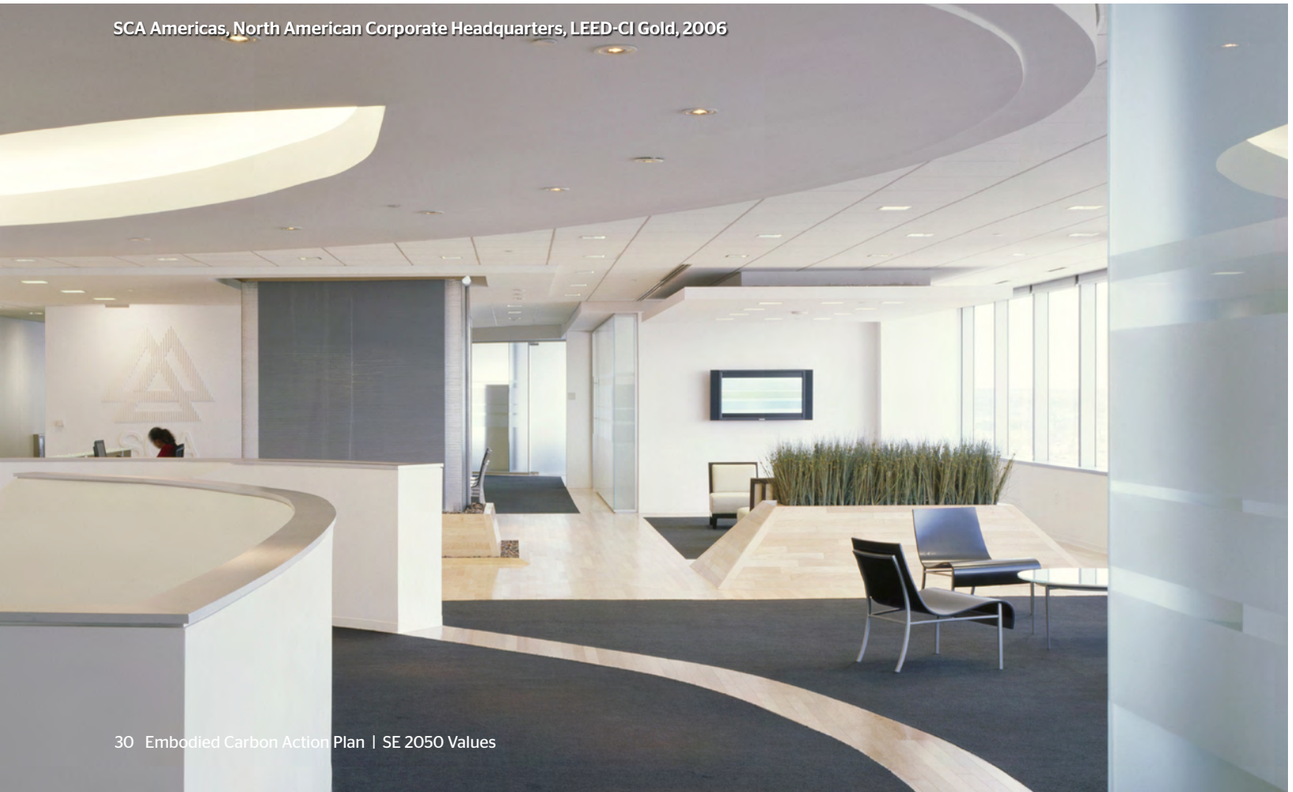
ADVOCACY

LOOKING BACK

CLIENT OUTREACH

Many of the clients EwingCole works with have an interest in incorporating sustainable design into their buildings but may not be aware of the impact that the building's structure has on the overall sustainability of the project. As a firm we have worked to educate and inform a handful of our clients on the embodied carbon impact of a building's structural system.

Announcing our firm's commitment to the SE 2050 Program on the company's social media platforms and website was the first step in the journey of spreading the news and informing our clients. EwingCole's SE 2050 Committee has also worked with our Director of Sustainable Design, company executives, and our marketing department to develop marketing materials and proposal language related to the SE 2050 Commitment. Our goal will be to include this information as standard in the materials we market to all clients so that the sustainability efforts the firm is making may become the norm across the construction industry.



SCA Americas, North American Corporate Headquarters, LEED-CI Gold, 2006

NETWORK COLLABORATION

The goal of reducing, and ultimately eliminating embodied carbon from building design is one that the construction industry must work together to achieve. The local NCSEA chapter of our Philadelphia office, the Delaware Valley Association of Structural Engineers, formed a Sustainable Design Committee, championed by its member firms, to advocate for and share knowledge on embodied carbon reduction with local design firms and product suppliers. EwingCole has participated with our colleagues at the other member firms to develop sustainable design best practices that can be used by all firms in their designs.

LOOKING FORWARD

OUTREACH & COLLABORATION

In 2025, we would like to investigate collaborating with our general contracting affiliate company, EC Build, in a whole building sustainable design process. Our direct connection with materials suppliers and sub-contractors through EC Build will allow us to advocate for embodied carbon reduction throughout the design and construction industry. We will continue to communicate with our clients our commitment to reducing structural embodied carbon, as well as participate in our local office sustainability committees to advocate within the construction industry. Finally, we have set a target to send one advocacy letter to a product manufacturer, for every project, in support of lowering product GWP values.

Live Nation, The Fillmore Minneapolis

University of Pennsylvania, Burk-Bergman Boathouse

SUNY Upstate Medical University Hospital, Upstate Cancer Center

03 | FIRMWIDE SUSTAINABILITY GOALS

The SE 2050 Commitment is a core pillar of our broader EwingCole Sustainability Action Plan.

A series of overarching goals and action items apply to and support every one of our four sustainability commitments, including SE 2050. These broader goals are defined under the following headings:

- Design Process
- Education
- Tracking & Reporting
- Culture
- Outreach & Advocacy

WHERE WE ARE	WHERE WE ARE HEADING	ACTION ITEMS FOR 2023-2025
DESIGN PROCESS		
Our process is informed by a deep understanding of the program, the site, and the science of buildings, and it starts with the need to discover a project's full potential.	A forecasting and broadening of perspective. We are striving to look beyond the bounds of an individual building 1) in time, to how it will perform and what it's impact will be in 20, 40, and 60 years from now, and 2) in geography, to learn how material selection and carbon emissions impact not just our site, but the region and world.	- Elevate sustainability as a key priority in our project selection process. - Update our Fundamental Design Report template to include dedicated performance targets for EUI, embodied carbon, and holistic material selection.
EDUCATION		
EwingCole Continuing Education (ECCE), our Associates Group, Thrive@EC, and our membership to USGBC Education provide an extensive set of resources and content for escalating our learning on key sustainability topics	To utilize these resources effectively, we are developing a framework of priority, specific assignments of content, and further dedication of time and funding. We are also shifting our mindset to include not just urgency, but celebration of the benefits new knowledge brings to our team.	- Collaborate with Human Resources to regularly update onboarding materials in support of our 4 sustainability commitments. - Develop a matrix for training on design processes and tools that includes training needs by discipline, role, and years of experience. Incorporate this training requirement as part of annual reviews.
TRACKING & REPORTING		
We pride ourselves on the rigor of our multi-disciplinary, quality assurance evaluation for projects, taking a meticulous and methodical approach to ensure not only health, safety, and wellbeing of future occupants, but compliance with any number of regulations, codes, and market-specific requirements.	To more deeply integrate sustainability reporting, we will add specific layers to our QA process: evaluation of performance, confirmation that criteria are met, and verification that data has been reported.	- Finalize the new Sustainable Design Database - Expand the voices involved in sustainability beyond core design disciplines to include marketing, communications, and IT
CULTURE		
With more people back in our offices than any other time in the past two years, we are reigniting and reinventing community activities that bring people together; from studio pin-ups, to project presentations, to events around Earth Day and International Women's Day.	Our next cultural steps involve adding breadth and regularity to create more frequent connections among projects and our aspirations and sustainability commitments – from supporting a sustainability champion on each team, to initiating Friday Roundtable discussions, to visual celebrations such as an EUI Wall or Regenerative Material Palettes.	- Develop an internal research project process to award funding to 2 projects per year based on submissions tied to current priorities.
OUTREACH & ADVOCACY		
We have shared some of our most high performing, successful projects at conferences around the country, and more than 10% of our staff already participate in community and professional organization leadership and activism.	To add our collective voice to the call for design for people and planet, we will strive to establish regional and national leadership through participation in industry, government, and/or professional organizations outside the firm.	- At the firm scale, a renewed focus and incentive toward participating in advocacy will come together through firmwide discussion. - At the product scale, we will develop resources to support outreach to our material and product suppliers.

SE 2050 COMMITTEE

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LEARN MORE

Our Sustainability Services

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