

SE2050

## EMBODIED CARBON ACTION PLAN YEAR 2- 2023

ARCHITECTS ENGINEERS INTERIOR DESIGNERS PLANNERS

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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

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Robert A. McConnell, AIA President

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

Colleen Alacharell Morin P. Ty

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

Maria R. Papiez, AIA, NCARB

Maria R. Papiez, AIA, NCA 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

# GRAHAM BUILDING







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## O1 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".



Sustainable Commitments

### 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'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



SUSTAINABILITY **COMMITMENTS** 

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BUILDING **ENCLOSURE** & STRUCTURE



**ENERGY** & **SYSTEMS** 

MATERIALS HEALTH & CARBON

# **02** SE 2050 VALUES

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**ADVOCACY** 

### EMBODIED CARBON REDUCTION STRATEGIES

### **EDUCATION**

### REPORTING

#### LEADERSHIP

EwingCole announced its commitment to the SE 2050 Program to the structural engineering staff at a weekly group staffing meeting in September 2021. Colleen Blackwell, PE, principal with the firm, was chosen to serve as EwingCole's Embodied Carbon Reduction Champion. Colleen joined EwingCole in 2011 and has over 25 years of experience as a structural engineer. She is based in EwingCole's Philadelphia office, where she leads our internal SE 2050 Committee as we strive to eliminate embodied carbon in our projects.

#### **RAISING AWARENESS & INITIAL EDUCATION**

Prior to joining the SE 2050 Commitment, our structural staff possessed varying levels of understanding of embodied carbon and Life Cycle Assessment (LCA) procedures. A focus group committee was formed from our engineers with a passion for sustainability, who possess a wide range of technical experience. This SE 2050 Committee has worked with the Embodied Carbon Reduction Champion, and EwingCole's sustainable design committee, Thrive@EC, to develop embodied carbon education resources for the entire firm.

Our firm's dedication across all engineering and architecture disciplines allows us to share resources and knowledge that will benefit all. An embodied carbon and sustainable design continuing education series was developed and shared with the firm through Thrive@EC's partnership with each of the four guiding commitments – AIA 2030, AIA Materials Pledge, SE 2050, and MEP 2040.

The full SE 2050 library of resources was shared with our structural engineers, and discussions of sustainable material alternatives are held during our monthly "circletime" meetings where our group shares our collective gained knowledge on all structural engineering topics.

#### LOOKING FORWARD IN 2023

#### **ONGOING TRAINING & COLLABORATION**

Embodied Carbon education and development of best practices for building design are an ongoing process to which the SE 2050 Committee is dedicated. We continue to educate all technical staff on the importance of reducing embodied carbon in their projects. 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. We also plan to develop new internal learning sessions and training initiatives for our staff.



Drexel University, Drexel Rec Center

MCAEL UNIVERSITY RECREATION CENTER

#### THE NATION

WE BUILD

TOGETHER

EMBODIED CARBON REDUCTION STRATEGIES

**ADVOCACY** 

### **EDUCATION**

tthe American People

### REPORTING

#### **DATABASE REPORTING**

EwingCole submitted two projects to the SE 2050 Database in the fall of 2022. These projects represent two of the extremes in embodied carbon and structural design. One project, at a schematic level, utilized a mass timber structural system, taking advantage of the embodied carbon offsets afforded by using biophilic materials. The second project, in construction, utilized a conventional composite steel frame resulting in a more significant embodied carbon impact.

#### **DOCUMENTATION PROCESS**

During the past year, our SE 2050 Committee has worked with members of Thrive and the AIA 2030 Committee to develop our firm's documentation process using our history with AIA 2030 Commitment tracking as a baseline. We have learned from experience that it is best to begin the data tracking and documentation process early-on in the project timeline. Multiple LCA software tools have been tested, and our firm has settled on using early modeling software, such as Cove.Tool and Athena, for concept and schematic design level analysis, and more powerful analysis tools, such as Tally integrated within Revit, for design development and construction documents level analysis.

#### LOOKING FORWARD IN 2023

In the coming year, we have set a goal to develop our firm baseline design Global Warming Potential (GWP) from our catalog of past projects, with Revit models, that have completed construction. As part of this effort, we will also be looking to expand our structural groups' skills and offer LCA modeling training to our engineers. The baseline data gathered from this modeling effort will be integrated with our internal AIA 2030 project database. The SE 2050 Committee has set a target for performing a Whole Building LCA (WBLCA) on



approximately 10 percent of our new projects for 2023. We plan to submit LCA data for all modeled projects to the SE 2050 Database, as well as reporting structural material quantities for all major projects.



### **ADVOCACY**

### EMBODIED CARBON REDUCTION STRATEGIES

### **EDUCATION**

### REPORTING

#### **EARLY INVOLVEMENT IN DESIGN CHARRETTES**

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, and use the baseline data we develop to inform our clients of the embodied carbon impacts that different designs will have. Our involvement will build from the education opportunities discussed above, and upon early coordination with Project Managers.

#### **PROJECT AND PROCESS INCORPORATION**

As a result of the early design discussions for some of our projects last year, we incorporated biogenic materials into a handful of projects, and have also collaborated with a local concrete supplier to test several concrete mix designs with varying levels of embodied carbon reduction to determine the best use for the project. The firm's structural concrete, masonry, and steel specifications were updated this past year to include embodied carbon performance criteria metrics (GWP, recycled material content, etc.). We have also updated the language in our general notes to incorporate the NRMCA regional GWP benchmark values per concrete mix.

#### LOOKING FORWARD IN 2023

Beginning in 2023, the SE 2050 Committee is partnering in an internal focus group with members of our firm's three other framing commitments to develop **DEVELOPING A BASELINE LIBRARY** firmwide best practices for both embodied carbon EwingCole's Embodied Carbon Reduction Strategies will and operational carbon. The targets for 2023 include be ever evolving as our firm develops its understanding incorporating language into our specifications to and implementation of embodied carbon reduction, require contractors to submit product-specific Type III and ultimately elimination. While the incorporation of **Environmental Product Declarations for high-impact** structural materials; defining uniform standards for sustainable design principles is not new to the firm, this WBLCA impact category evaluations; updating our firm's is the first time that the focus has been on the structural Fundamental Design Report (FDR) template to include elements of our building designs. As described in the summary sections for structural embodied carbon previous chapter, an internal baseline database will be developed from our past projects to help our firm reduction; updating our Revit templates to support consistent material integration in Tally; and updating our establish GWP reduction benchmarks in future years of internal project procedures and checklists to ensure that the commitment. embodied carbon reduction and sustainable design are considered from the beginning of the project.



#### **PROJECT AND PROCESS INCORPORATION**

### **ADVOCACY**

### EMBODIED CARBON REDUCTION STRATEGIES

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### **EDUCATION**

### REPORTING

#### **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.

#### **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 for embodied carbon reduction throughout the local design firms and product suppliers. EwingCole has design and construction industry. We will continue participated with our colleagues at the other member to communicate with our clients our commitment firms to develop sustainable design best practices that to reducing structural embodied carbon, as well as can be used by all firms in their designs. 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 LOOKING FORWARD IN product manufacturer, for every project, in support of lowering product GWP values.

# 2023

#### **OUTREACH & COLLABORATION**

In 2023, 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 subcontractors through EC Build will allow us to advocate



# **O3** ACCOMPLISHMENTS & GOALS

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.	<ul> <li>Elevate sustainability as a key priority in our project selection process.</li> <li>Update our Fundamental Design Report template to include dedicated performance targets for EUI, embodied carbon, and holistic material selection.</li> </ul>	
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.	<ul> <li>Collaborate with Human Resources to regularly update onboarding materials in support of our 4 sustainability commitments.</li> <li>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.</li> </ul>	
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.	<ul> <li>Finalize the new Sustainable Design Database</li> <li>Expand the voices involved in sustainability beyond core design disciplines to include marketing, communications, and IT</li> </ul>	
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.	<ul> <li>Develop an internal research project process to award funding to 2 projects per year based on submissions tied to current priorities.</li> </ul>	
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.	<ul> <li>At the firm scale, a renewed focus and incentive toward participating in advocacy will come together through firmwide discussion.</li> <li>At the product scale, we will develop resources to support outreach to our material and product suppliers.</li> </ul>	

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## SE 2050 COMMITTEE

### STRUCTURAL ENGINEERING

Paul L. Constantini, PE, SE Director of Structural Engineering, Principal Philadelphia, PA

Colleen F. Blackwell, PE Principal Philadelphia, PA

Taryn Francischetti, EIT Philadelphia, PA

James Pyne, EIT Philadelphia, PA

### SUSTAINABLE DESIGN

Maria Papiez, AIA, NCARB Director of Sustainable Design Irvine, CA / Raleigh, NC AtlantiCare, Cancer Care Institute



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