

2025 EMBODIED CARBON ACTION PLAN

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**STRUCTURAL
ENGINEERING
INSTITUTE**

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Hocking Hills State Park Lodge

Logan, Ohio

ABOUT US

SMBH, Inc has been committed to providing intelligent, sustainable structural engineering solutions for architects, contractors, and building owners since our inception in 1972. Deeply rooted in a culture of collaboration and trust, we are known for taking on challenging projects with an approach that focuses on innovation and responsiveness. Our collective experience and excitement to better the built environment make SMBH a valuable member of your team.

We dedicate ourselves to producing quality structural design and documentation, code analysis, and design/build solutions. We understand that balancing design, functionality, and cost, paired with effective communication, is critical to successfully coordinating every project. SMBH listens to you, working closely with you to ensure the structural design complements your vision.

MISSION

[WHY]

We are here to support people and their vision to build a better world together.

[HOW]

We specialize in structural engineering and believe in collaborating with the dreamers, the builders, and the users in pursuing a holistic solution for every project and built environment.

[WHAT]

Our team is dedicated to providing quality, innovative, and sustainable structural designs that balance environmental and economic impacts while supporting the community.

CORE VALUES

Our firm is based on five cultural cornerstones, which compose our Core Values. These deeply ingrained principles manifest as choices based on understanding what is truly important to us and why, so our decisions come from a place of authenticity.



Connections



People



Integrity



Development



Legacy



OUR COMMITMENT

Every building is uniquely designed, fabricated, and constructed with interconnected and interdependent systems. When likened to the workings of the human body, a building's structural design resembles that of a skeleton – essential for supporting all systems and functions while providing strength and resilience throughout its lifespan. As structural engineers, we recognize the significance of what our designs contribute. As learners, we are gaining knowledge about how our designs inherently affect the environment based on the embodied carbon emissions of our chosen materials. As people, we pursue stewardship by coordinating efforts to align the goals of our systems, leading to improved building performance and a better future.

The SE 2050 program provides structural engineers free resources, tools, and strategies to inform how we can understand, track, and monitor our embodied carbon

emissions. Committing to the program provides a network of data from various firms and accountability tracking to inform what adjustments are necessary to achieve net-zero embodied carbon in our industry by 2050. SMBH has committed to the SE 2050 program as a tangible step toward aligning our work with our Vision, Mission, and Values. Since the program serves as a data collection guide and learning tool, increasing our awareness of the environmental impact of our projects will help us understand how to gradually and collaboratively reduce that impact. This awareness and transparency promote early engagement and proactive planning.

Our Embodied Carbon Action Plan (ECAP) is the initial phase of our engagement and planning efforts. Guided by our core values, it details how we are setting our company's baseline, defining measurable goals, and outlining a comprehensive roadmap to decrease embodied carbon in our projects.

Blacklick Woods Metro Park Watching Tower

Blacklick, Ohio





EDUCATION PLAN

Pursuing sustainable design requires understanding the firm baseline, setting goals, and taking incremental steps toward those goals. Our firm defines, outlines, and internally publishes a company baseline of standard procedures and operations for project approach, design, and performance. This baseline informs current standards, optimization strategies, and new ventures that align with our company vision. By synchronizing our vision with the SE 2050 goal of carbon-neutral projects by 2050, an established baseline will support a roadmap that highlights the significance of early communication and collaboration, both internally and externally, regarding embodied carbon strategies. To keep our team updated, firm-wide quarterly meetings are held to share internal progress and updates related to baseline standards, incremental changes needed to achieve company goals, and project emission data.

The actionable steps that we have already completed or plan to complete include:

- Distribute a firm-wide announcement of SMBH's SE 2050 Commitment – please see Appendix.
- Create and record a presentation that explains the impact of embodied carbon and reduction strategies in structural materials. This presentation is included in our onboarding process for new employees and is available for current employees as a resource reference.
- Send engineers to external educational programs like webinars, conferences, and SE 2050 signatory calls.
- Engage with a Carbon Leadership Forum Regional Hub by attending presentations and sharing information.
- Schedule internal educational development sessions on how sustainability impacts project processes.

Pomerene & Oxley Hall Renovation
The Ohio State University

Columbus, Ohio





REPORTING PLAN

As we introduce considerations for embodied carbon (EC), we will begin requesting environmental product declarations (EPDs) – if available – in specifications for projects of a certain size. Revit, the Building Information Modeling program, is used to manage most project deliverables and will remain essential for material tracking. Material output calculations will be conducted using either a Revit plug-in such as bimCAT, formerly known as TallyCAT, or by developing unique schedules. Each embodied carbon lifecycle assessment (LCA) will concentrate on the product stage (A1-A3) at the end of the design phase, when construction documents are complete. Eventually, an earlier LCA will be conducted after design development. The actionable steps we plan to complete include:

- In Revit, develop schedules to assist in reporting material quantities for embodied carbon tracking.
- Submit at least (2) projects to SE 2050 with a goal of submitting (5) within the 2025 calendar year.
- Begin comparing types of projects and associated EC data.



Kunz-Brundige Franklin County Extension
The Ohio State University
Columbus, Ohio



REDUCTION STRATEGY

Our firm has developed general metrics to track performance throughout the lifecycle of a project. Reviewing established procedures informs us of the available steps to update processes with the aim of better serving the firm, our clients, and now the environment through embodied carbon considerations. The project lifecycle consists of three phases: pre-design, design, and post-design. Our pre-design phase relies on proposals and client relationships for project pursuit. Our design phase utilizes kickoff forms to set project expectations and Revit to manage most project deliverables. Finally, our post-design phase uses client surveys and internal review meetings to gauge client satisfaction and lessons learned. Evaluating each of these phases to introduce embodied carbon goals promotes a comprehensive approach to sustainable design.



Long & 3rd Apartments

Columbus, Ohio

First-Year Goal

Educate ourselves about embodied carbon as it relates to modifying the company baseline. To update the baseline, we will evaluate standards and procedures, create tracking methods, and conduct embodied carbon check-ins. The actionable steps we are working toward include:

- Develop metrics for tracking which projects have sustainability goals and what they are.
- In proposals, include inquiries to clients about sustainability and EC goals.
- In project kickoffs, outline the sustainability and EC goals. Goals may include, but are not limited to:
 - Conversations with clients about overall project goals to align paths to efficiency.
 - Conversations with clients about EC reduction strategies.
 - Tag projects suited for emission data tracking, and outline frequency of reports.
- In review meetings, outline the victories and challenges of sustainable design and EC goals. If no EC goals were established, then discuss ways that EC reductions could have been communicated and pursued for future projects.

Five-Year Goal

Expand from communication to implementation. We aim to identify which clients value sustainability goals, which projects necessitate EC data, and which manufacturers can support embodied carbon objectives. This information will enhance our understanding of industry requests and capabilities, guiding our conversations around education and inclusion. Internally, our goal is to ensure that all structural engineers are trained in the core concepts and skills needed to measure, reduce, and report embodied carbon. The actionable steps we are pursuing include:

- Collaborate with clients and manufacturers for EC capabilities and lessons for business development.
- Update specifications to be performance-based and include EC considerations.
- Update general notes to match specification edits and include reduction strategies.
- Educate ourselves on ways to introduce wood through composite design and mass timber.
- Build an internal library of project data for comparison – 30 projects by 2030.
 - Report a minimum of 5 projects each year.
 - Each engineer reports at least 1 project by 2030.



KNOWLEDGE SHARING NARRATIVE

SE 2050 is focused on structural designs: assessing current standards, proposing alterations, and tracking advancements to provide the client with an improved product that bolsters efficiency, optimization, and affordability. To invite conversations about sustainable design, we have published our commitment to SE 2050 on our website. Also included on the SMBH website is our status as an AIA continuing education provider; we plan to develop a session on sustainable design for our architectural partners.

We value the connections we build, the people we work with, and the development we experience to become better people for a better world. Beyond project-based goals, our firm encourages setting and pursuing individual goals for personal development through getting involved in the AEC community: connecting with clients on a personal basis, seeking educational opportunities that stretch beyond day-to-day expertise, and joining committees of professional organizations.

One example within our firm is the active involvement in the Structural Engineers Association of Ohio (SEAO) Sustainable Design Committee (SDC) whose mission is to educate and advocate for sustainable design. Local structural firms can discover sustainable design practices and learn how their peers are addressing the challenge of achieving net-zero embodied carbon by 2050 through the committee. After being awarded a grant from the National Council of

Structural Engineers Associations in 2024, the SDC collaborated to expand the annual SEAO conference to include its first Sustainability Track. For the 3-session half-day overlap event, our colleague and Sustainability Subject Matter Resource helped to create, present, and facilitate the first session that covered why sustainable design is essential, from a global perspective down to project efficiency. The remaining two sessions covered how the industry is being transformed, including code updates, and what firms can do today to integrate sustainable design into their pre-established processes. Attendees included architects, engineers, and manufacturers, and the Sustainability Track will continue in subsequent years. Maintaining connections through professional organizations while motivating our team to participate in the AEC community will lead to more examples like this, ultimately enhancing the industry through sustainable design.

At SMBH, we embrace lifelong learning, honing our skills, and adapting to make a positive impact within our firm and through our designs. We value collaboration with architects, contractors, and other designers to create comprehensive solutions. We are dedicated to supporting people and their visions to collaboratively build a better world—one that offers the highest quality product while reflecting our shared environmental, economic, and social interests.



"Current" by Janet Echelman

Columbus, Ohio



LETTER OF COMMITMENT



SMBH Inc.
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614-481-9800

LETTER OF COMMITMENT TO THE SE 2050 PROGRAM

DATE: 11/3/2023
TO: Laura Champion, Director, Structural Engineering Institute
FROM: Stephen Metz, Principal + President, SMBH Inc.
SUBJECT: Letter of Commitment to the SE 2050 Program

Dear Laura:

SMBH Inc., a 45-person firm located in Columbus, Ohio, 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 mission of SMBH Inc. is to support people and their vision to build a better world together. With over 50 years of service to the built environment, we are dedicated to quality, responsiveness, and accountability to our clients and the community. We believe that joining SE 2050 aligns with our core values of connections and integrity, and will bolster further collaboration and trust with designers, builders, and users. As the industry shifts and changes, we at SMBH Inc. learn and grow, maintaining our culture to do the right thing by pursuing holistic solutions for every project for the benefit of the built environment.

We therefore commit SMBH Inc. to take the following steps which are part of the SE 2050 Commitment Program:

- Within six months and annually henceforth, we commit to reporting an Embodied Carbon Action Plan (ECAP) and permit the ECAP document or form be made public on the SE 2050 website.
- Within one year and annually henceforth, we commit to submit data to the SE 2050 project database in a collaborative effort to understand embodied carbon in structural engineering projects and to set attainable targets for future projects.

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

Sincerely,



Stephen Metz, PE, LEED AP BD+C
Principal + President
smetz@smbhinc.com

DIRECT EMAIL ANNOUNCEMENT



SMBH Has Committed To SE 2050!



SMBH has committed to the SE 2050 program as an actionable step in aligning our work with our Vision, Mission, and Values. The program is a data collection guide and learning tool to help us be more aware of the environmental impact of our projects and how to lighten that impact progressively. This awareness and transparency is where the industry is moving, and engaging early may provide new avenues for business.

SE 2050 provides structural engineers with free resources, tools, and strategies to inform how we can understand, track, and monitor our emissions. Committing to the program provides SMBH with a network of data from other firms and accountability tracking to inform how to adjust to achieve net zero embodied carbon in our industry by 2050.



Connections



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Development



Legacy

Background:

The SE 2050 program was established by the Structural Engineers Institute (SEI) in response to the 2019 Carbon Leadership Forum challenge that stated, "All structural engineers understand, reduce, and ultimately eliminate embodied carbon in their projects by 2050." The challenge began with [Architecture 2030](#) and continues with SE 2050. It focuses on eliminating carbon emissions from the built environment to avoid irreparable climate change.

[Read More](#)



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