2025

EMBODIED CARBON ACTION PLAN

MBJ

STRUCTURE THAT SHAPES

OUR COMMITMENT

Integrate sustainability practices into MBJ's design culture.

We believe that creative design practices, in conjunction with innovations in material manufacturing and sourcing, make zero carbon structural systems a feasible achievement by the year 2050. We are committed to making changes within our walls and influencing others outside of our walls to make this future a reality.

As a signatory to the SE 2050 Commitment Program, MBJ is committed to doing our part in this effort by measuring, reducing, and ultimately eliminating embodied carbon in the structures we design.

Since joining SE 2050, we have partnered on projects and within our communities with architects, owners, and material suppliers to include new technologies and intentional design approaches to reduce embodied carbon across our portfolio of work.

Our actions as structural designers play an outsize role in the global climate crisis.

MBJ SUSTAINABILITY KNOWLEDGE COMMUNITY (SKC)

The Sustainability Knowledge Community is open to all MBJ employees and meets to share knowledge and advance our capabilities to track and reduce embodied carbon. The group has practical working sessions for members to practice and understand how to incorporate embodied carbon accounting into component and system design.

Additionally, there are member presentations and project updates on successes and challenges toward reducing embodied carbon. Subgroups for Education, Reporting, Reduction, and Advocacy are responsible for developing and carrying out the actions set forth in MBJ's Embodied Carbon Action Plan.

MBJ's commitment to carbon neutral buildings in 2050 requires us to act now.

EDUCATION

MBJ is committed to providing firmwide education on embodied carbon reduction and on our involvement with SE 2050 through several methods of recurrent communication.

MBJ's Sustainability Knowledge Community is responsible for disseminating sustainability education materials and ensuring that MBJ is informed of the latest sustainability news, methods, and trends from leaders across all relevant industries.

Firmwide sustainability education is a keystone of achieving our overall goal to integrate sustainability into MBJ's design culture. Education will be provided in a multifaceted approach aimed at engaging the maximum number of employees.

This year, we have incorporated sustainability education into our onboarding process. All new hires will receive sustainability education training within their first two weeks. The education includes a pamphlet providing fundamental concepts of structural engineering and embodied carbon, along with a video detailing MBJ's sustainability initiatives. These materials will be reviewed and updated annually to reflect the continually evolving nature of sustainability in design.

2025 ECAP GOALS

Provide Internal Education

- Present 1 internal sustainability tech talk webinar
- Host an external expert speaker quarterly for a firmwide presentation
- Curate 1 intranet post per month
- Integrate structural embodied carbon education into the onboarding process for new engineers
- Provide all interns with embodied carbon in structural engineering education culminating in the completion of a mini research project

Engage in External Education

Engage with CLF Minnesota, Phoenix, and Chicago hubs by attending presentations and working sessions

- Participate in sustainable design conferences through attendance, peer review, and proposals

Treetop Trail at the Minneapolis Zoo, Apple Valley, MN - Adaptive Reuse of Existing Structure

A LOOK BACK AT EDUCATION IN 2024

2
Sustainability Seminar Series Speakers

10
Sustainability Intranet Posts

3
Sustainability Vendor Presentations

REPORTING

MBJ is committed to leveraging effective data reporting tools and our decades of experience in structural design to track and report embodied carbon data for the benefit of the profession and our own design process.

To broaden our tracking experience and seed the database with useful inputs, we will measure and report embodied carbon for projects reflecting a range of material types, end uses, and scale. By developing standards and providing training, we will reduce the effort required to produce quality embodied carbon data; thereby, making this data more accessible to all staff with the intention that embodied carbon consideration will influence decisions throughout the life of a project.

Over the past year, we continued to find it challenging to extend our Tally user group and incorporate LCA processes on a broader spectrum of projects. This year, we intend to incorporate LCA creation into the standard project review and quality assurance process for our largest projects. This initiative aims to involve more project teams and increase familiarity with our LCA program among engineers and BIM specialists.

2025 ECAP GOALS

Internal Database as a Decision Making Tool

We will continue to develop our database tool that allows for efficient and adaptable comparison of the embodied carbon emissions of multiple projects. We intend to use these data comparisons to recognize potential trends and begin to understand the impact of early design decisions.

LCA Standardization and Quality Initiatives

As the number of MBJ employees performing LCAs and our contributions to the SE 2050 database increase, we will continue to improve our initiatives towards quality assurance and quality control. This will involve a more streamlined process for selecting material definitions to use in our LCA process as well as more oversight and review of completed LCAs prior to submission. Not only does this ensure that better data is provided for the SE 2050 database, but it also provides value by encouraging more review and mindful decision making in our carbon tracking strategies.

Reporting Targets

MBJ will report 15 projects to the SE 2050 database, with the following project parameters represented:

- 3 projects with custom mix designs used in the LCA
- 8 projects with design started or completed in 2025
- At least 5 different major structural material systems
- 7 different building uses
- At least 1 project from each MBJ office

A LOOK BACK AT REPORTING IN 2024

9 Projects Submitted to SE 2050 Database

4 US States with Reported Projects

4 Primary Gravity Materials

6 Building Use Types

REDUCTION

MBJ's Sustainability Knowledge Community is actively working to update standards, modify specifications, and develop design tools aimed at capturing carbon reduction in structural components.

We will embrace a mantra that design and material strategies for reducing embodied carbon can be incorporated into all our projects today regardless of building type, sustainability requirements, or ownership structure.

Eyeing the future, MBJ will also actively participate in research geared towards carbon reduction to help identify and create the technologies needed to reach net zero embodied carbon.

Over the past year, MBJ has achieved reductions in embodied carbon at the project level by engaging with clients and owners in system selection early in the design process, optimizing structural design, and working with construction partners on material specifications and sourcing. We also gained valuable insights into the significance of project location and the local concrete market when establishing GWP limits for concrete mixes. By reviewing local baselines, we can better identify opportunities to target more meaningful reductions.

By pursuing project specific embodied carbon reduction strategies, we have cultivated a method to receive reliable partner and contractor feedback prior to creating firmwide embodied carbon reduction resources.

2025 ECAP GOALS

Pursue Reduction Strategies in all Project Stages

Early Engagement

Communicate the embodied carbon impacts of different design options to clients on at least eight projects. Compare different design options with embodied carbon as a performance metric during the project concept phase on at least eight projects.

Developing Design

Incorporate material reuse into at least one project and submit a Circular Economy Narrative. Participate in client design charettes and speak to design considerations impacting embodied carbon on at least one project

Shepherding Construction

Incorporate concrete GWP limits and EPD requirements into company specifications. Facilitate the creation of a new EPD for a project.

Track Reduction Goals

Create an internal process integrated with existing workflows to track which projects set and achieve embodied carbon reduction goals.

Vesterheim Commons, Decorah, IA - Sustainable Mass Timber Construction

A LOOK BACK AT REDUCTION IN 2024

6 Projects with State Mandated Sustainability Goals

1 Project Reusing Structural Steel

12 Project Concrete GWP Limits

3 Mini Research Studies

ADVOCACY

MBJ recognizes that the path forward for all structural engineers to eliminate embodied carbon in their projects by 2050 requires impactful collaboration.

We are pushing forward on our commitment to eliminate embodied carbon on our projects by making communication a priority in our client relationships. We believe that we have an impactful position in our industry, and we are using our position among architects, owners, and industry partners to escalate the need for action.

In 2024, MBJ expanded our efforts to guide supply chains towards lower carbon materials by focusing on concrete specifications. Through our performance-based specification, we established GWP limits and required plant - and mix-specific EPDs. We maintained regular communication with industry partners to understand their capabilities and the implications on our projects. Looking ahead to 2025, we will continue advancing GWP reductions through stronger engagment with our suppliers.

2025 ECAP GOALS

Embodied Carbon Reduction in Public Policy

We will continue to engage in public policy conversations via participation in forums such as the Carbon Leadership forum hubs and state Structural Engineer's Association Sustainable Design Committees. Through these, we are seeking to influence local policies and upcoming revisions.

LCA Initiatives and Research Opportunities

We plan to integrate Life Cycle Assessment (LCA) creation into our comprehensive project quality programs. Based on project scale, certain projects will be required to complete an LCA as part of this initiative. This effort is intended to expand LCA knowledge and engagement across a wider group within MBJ.

We are also advancing research efforts around the reuse of structural building materials. Through our participation in the University of Minnesota's "Applied Research in Practice" program, we are partnering with a researcher on this topic. The insights gained will be shared with our architectural and contractor partners to promote more sustainable construction practices.

Incentivizing Concrete Mix Specific EPDs

We are preparing to issue an updated concrete specification that, by default, will require mix-specific EPDs on our projects. Our experience has shown that this change will not cause unnecessary disruption and will help drive market momentum in expanding the availability of EPDs. We will monitor how this requirement is received in more remote regions and smaller markets, and work to educate our trade partners to provide guidance on meeting the new specification.

We are committed to sharing our knowledge with our industry partners to raise awareness of the need for immediate action across disciplines.

A LOOK BACK AT ADVOCACY IN 2024

2 External Presentations Given

1 Projects with LCA Goals at Onset

4 Projects with Owner Participation in Requiring Concrete GWP Limits

4 Projects with EPD Requirements

MEYER BORGMAN JOHNSON

is a multi-specialty structural design practice structuring places that shape lives. We lead with curiosity and deliver with quality to create innovative solutions for our clients. Whether designing a place for people to live, work, heal, travel, play or learn, we create structures that shape our cultures and communities.

SE 2050 COMMITMENT PROGRAM EMBODIED CARBON CHAMPIONS:

Catherine Lumitap, EIT
clumitap@mbjeng.com

Lindsey Lyrenmann, PE, SE
llyrenmann@mbjeng.com

MBJ