

2023 -2024

# EMBODIED CARBON ACTION PLAN

**MBJ**

STRUCTURE THAT SHAPES





## 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 do 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 cement 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 is committed to providing firm-wide 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 ensures that MBJ is informed of the latest sustainability news, methods, and trends from leaders across all relevant industries.

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

Last year, the SKC developed an embodied carbon digital knowledge resource to spread information internally. This resource is housed on MBJ's intranet and acts as a learning resource where employees can browse for shared information or where they can submit any sustainability in structural engineering questions they might have. Responses are fielded by all member's of the SKC to draw on the full team's expertise and experience.

### 2023 ECAP GOALS

#### Provide Internal Education

- Present 1 internal sustainability tech talk webinar
- Host an external expert speaker quarterly for a firm wide presentation open to our industry partners
- Curate 1 intranet post per month
- Incorporate embodied carbon education in onboarding materials


#### Engage in External Education

Engage with CLF Minnesota, Phoenix, and San Francisco hubs.

- Co-chair Minnesota hub
- Attend presentations and working sessions

Tashjian Bee Center, Chaska, MN - 80% Natural Daylight | Structural Insulated Panels | Near Net Zero Energy

### A LOOK BACK AT EDUCATION IN 2022-2023

6/  
  
External  
Presentations  
Given

15/  
  
External  
Presentations  
Attended

4/  
  
Sustainability  
Seminar Series  
Speakers

1/  
  
Embodied  
Carbon Digital  
Forum Created

2/  
  
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.

In the past year, we rolled out a training program for our LCA methodology using the tool Tally. We engaged engineers and BIM specialists in the process but did not reach the full envisioned audience. We believe that empowering more staff to take part in the carbon accounting process is a key step towards individuals feeling ownership in this effort. Thus, we will continue to work towards the goal of extending our user group.

## 2023 ECAP GOALS

### Internal Database as a Decision Making Tool

We will initiate the creation of a 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 LCA's 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 LCA's 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 20 projects to the SE 2050 database, with the following project parameters represented:

- 3 projects with custom mix designs used in the LCA
- 12 projects with design started or completed in 2023
- At least 4 different major structural material systems
- 7 different building uses
- At least 1 project from each MBJ office



**A LOOK  
BACK AT  
REPORTING  
IN 2022-  
2023**

14/  
  
Projects  
Submitted  
to SE2050  
Database

4/  
  
US States  
with  
Reported  
Projects

6/  
  
Primary  
Gravity  
Materials

8/  
  
Building Use  
Types





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

# REDUCTION

MBJ's Sustainability Knowledge Community will work to update standards, modify specifications, and develop design tools that capture 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 reduced embodied carbon at a project level by engaging with clients and owners in system selection, optimizing structural design and working with construction partners on material specifications and sourcing. These project successes have informed scalable action across our company including updates to specifications and typical details.

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

## 2023 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 four projects. Compare different design options with embodied carbon as a performance metric during the project concept phase on at least four projects.

#### Developing Design

Incorporate material re-use into at least one project and submit a Circular Economy Narrative Participate in LEED design charrettes and speak to design considerations impacting embodied carbon on at least one project.

#### Sheparding Construction

Collaborate with a concrete supplier to reduce embodied carbon in a mix design below their standard provided mixes. Discuss and distribute results within our firm.Facilitate the creation of a new EPD for a project.

### Be a Research Catalyst

Reaching net zero embodied carbon necessitates new materials and methodologies in structural design. MBJ will sponsor a research intern and collaborate on a sustainability design project with the Consortium for Research Practices at the University of Minnesota in addition to funding internal research projects of multiple scales related to strategies for reducing embodied carbon in the built environment. to be shared at several conferences throughout the year.

The Dayton's Project, Minneapolis, MN - Energy Efficient Building Systems | Green Roof | Adaptive Reuse of Existing Building

A LOOK  
BACK AT  
REDUCTION  
IN 2022-  
2023



Specification  
Section Update



Whole  
Building LCA



Component  
Design  
Reduction



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 eliminating 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.

One of our ECAP goals of the last year was to engage more of MBJ's employees in interacting with clients and industry leaders in terms of sustainability. We made progress on this by more widely sharing strategies for advocacy with presentations to our staff. In the next year, we plan to further our efforts towards this goal by encouraging everyone at MBJ to think of themselves as an advocate.

## 2023 ECAP GOALS

### Embodied Carbon Reduction in Public Policy

We will actively monitor the status of policy initiatives local to MBJ offices such as the Phoenix Climate Action Plan and Minnesota HF 278. Through participation in local Carbon Leadership Forum hubs, we are seeking to influence these policies and upcoming revisions. We plan to connect local municipalities and policy leaders to the existing carbon reduction tools/strategies such as the CLF Owner and Policy toolkits.

### Owner and Client Advocacy

We will foster opportunities at the onset of projects to offer Life Cycle Assessments as part of project scope by educating our project managers and team members about these services. We will educate ourselves on deconstruction and salvage methods and advocate for these strategies with clients/owners. We will continue to communicate with our clients and project owners about our sustainability goals and our capabilities to help them achieve theirs.

### Incentivizing Facility or Product Specific EPDs

On at least two projects, we will discuss with the client/owner about requiring a facility or product specific EPD for at least one structural material for which only industry average EPDs are commonly available to incentivize the market toward improved carbon data. At least one of these will be completed in a region/market in which we haven't yet had EPD discussions.

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 2022-2023



1  
Internal Seminar on Sustainability for Project Managers



4  
Projects with LCA Goals at Onset



3  
Discussions with Concrete Suppliers about Performance Based Specifications



3  
Projects with EPD Requirements



## MEYER BORGMAN JOHNSON

is a multi-specialty structural design practice structuring places that shapes lives. We lead with curiosity and listening 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:



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# MBJ

It's the human  
impact of our  
work that  
matters.

STRUCTURE THAT SHAPES