

# 2023 Embodied Carbon Action Plan

June 30, 2023  
Year Two

## **Introduction**

There has never been a time when committing to sustainable practices has been more important. As structural engineers we bear significant responsibility for the design choices we make, as they have a direct impact on global carbon emissions. It is our duty to engage in minimizing the environmental footprint in the built environment. The urgent need to combat the negative impacts of climate change demands transformative action within the structural engineering industry.

At Structural Focus, we take pride in our decision to join the SE 2050 Commitment – a crucial milestone in our industry’s path towards reaching net zero embodied carbon structures. This commitment serves as a catalyst for change, driving us to continually educate ourselves and adopt effective methods for reducing embodied carbon within our discipline. By implementing these strategies outlined in this report, we pledge to proactively integrate sustainable practices into our projects, contributing to a more sustainable future.

## **Education**

### ***Required Electives:***

- Provide a Narrative of How the Embodied Carbon Reduction Champion will engage embodied carbon reduction at each office:
  - The office Embodied Carbon Reduction Champion will engage embodied carbon reduction in our practice by:
    - Updating our general notes and material specifications
    - Informing our engineers about the importance of Embodied Carbon and how we can reduce its impact.
- Make (1) webinar focused on embodied carbon available to employees.
  - A Sustainability Webinar including new knowledge gained from the SEAOSC Sustainability Summit was presented on September 28, 2022. Another webinar, covering updates to our concrete general notes & specifications and how to design more sustainably with concrete, is planned for July 2023.

### ***Additional Electives:***

- Train all your firm’s structural engineers on the core concepts and skills required to measure, reduce and report embodied carbon.
  - Structural Focus will conduct a seminar educating all staff about embodied carbon metrics, reduction techniques, and reporting.
- Initiate an embodied carbon interest group within your firm and outline their goals.
  - Structural Focus’s internal Sustainability Committee continuously seeks to broaden the knowledge about embodied carbon in structural engineering. The goals include updating material specifications, developing a database containing EPDs received from projects, and implementing the use of LCAs in more projects office wide.

### ***Electives for Future Consideration:***

- Create an embodied Carbon digital resource wiki and/or forum on your firm’s internal website for staff to create, share, and discuss embodied carbon educational resources.
- Incorporate embodied carbon education in our onboarding process for all new employees.
- Engage with a CLF Regional Hub.

- Provide narrative outlining plans for minimum (2) firm-wide presentations per year on the topic of embodied carbon.
- Propose other actions promoting embodied carbon education and describe their value.

## **Reporting**

### ***Required Elective:***

- Submit a minimum of (3) projects to the SE 2050 Database. (Greater percentage of projects than the previous year)
  - We commit to submitting at least (3) projects to the database this year. We have submitted (1) project to the database so far and will submit at least (2) others by the end of the year.

### ***Electives for Future Consideration:***

- Compare the embodied carbon emissions from multiple projects across the firm. Analyze and document what data or pieces of information are most important and communicate the findings to the firm.
- Propose other actions that promote the reporting of embodied carbon data and describe their value.

## **Embodied Carbon Reduction Strategies**

### ***Required Elective:***

- Collaborate with your concrete supplier to reduce carbon in a mix design below an acceptable baseline. Discuss what you found and what it means in your market.
  - Structural Focus has set GWP limits on concrete mixes (based on regional baselines) on a specific project. We are expecting to collaborate with concrete suppliers as the project progresses.

### ***Additional Electives:***

- Communicate the embodied carbon impacts of different design options to clients with creative data visualization.
  - We have created a bar graph showing the GWP of a variety of different materials. This will be used to show clients the impact we can have with different design schemes.
- Update specifications to incorporate embodied carbon performance. Include embodied carbon in your submittal review requirements.
  - Structural Focus commits to update material specifications to enhance embodied carbon performance. On one project we have updated our general notes & specifications for more sustainable concrete. This project will serve as a test run of the updates before rolling them out firm wide.

### ***Electives for Future Consideration:***

- Develop and implement a workflow that makes it easier to make early design decisions based embodied carbon.
- Submit a Circular Economy narrative describing how a project supports the circular economy.
- Compare different design options with embodied carbon as a performance metric during the project concept phase.
- Have an Environmental product declaration created for a project. Get a project or client to require the creation of an environmental product declaration that did not exist before.
- Participate in a LEED, ILFI Zero Carbon, or similar project design charette and speak to potential design considerations impacting embodied carbon.
- Incorporate sustainably harvested biogenic materials in at least one project.

- Proposed other embodied carbon reduction strategies and describe their value.

## **Advocacy**

### ***Required Electives:***

- Describe the value of SE 2050 to clients. How can your design teams collaborate to reduce embodied carbon?
  - [At the beginning of large new projects, we will educate clients on the SE 2050 commitment and discuss setting project specific embodied carbon goals.](#)
- Publicly declare your firm as a member of the SE 2050 Commitment however you see fit.
  - [On December 21, 2022, we posted about our commitment to SE2050 on the company LinkedIn page. Our commitment to SE2050 is also outlined on our website.](#)

### ***Additional Electives:***

- Engage with structural material suppliers in your region to communicate the importance of Environmental Product Declarations (EPDs) and low-carbon material options.
  - [We have set GWP limits on concrete mixes for a specific project and expect to engage with the concrete supplier as the project approaches the construction stage.](#)

### ***Electives for Future Consideration:***

- Give an external presentation on embodied carbon that demonstrates a project success or lessons learned.
- Mentor a firm new to the embodied carbon space. Describe how you identified their needs and what improvements were made.
- Engage with local, state, and federal governments to communicate the importance of low-embodied carbon procurement and construction policies, and provide expert testimony to this effect.
- Propose alternative methods for advocacy and describe their value.

## **Lessons Learned**

Reflecting on Structural Focus' first year committed to the SE 2050 program, we have learned some significant lessons worth sharing:

- Dedicating time to the early stages of the design process regarding material specifications and quantities impacts the ease of performing an LCA for a project at later stages.
- Using existing resources to make material specifications more sustainable (i.e. CLF model specs) is a great starting point.
- Team collaboration plays a significant role in increasing understanding of embodied carbon in the construction industry.
- A holistic approach involving all project disciplines and clients is necessary to reduce carbon emissions.