

# EMBODIED CARBON ACTION PLAN

SEPTEMBER 2022



**McNAMARA · SALVIA**  
STRUCTURAL ENGINEERS



## EMBODIED CARBON ACTION PLAN

### SE 2050 COMMITMENT

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#### SUMMARY:

McNamara • Salvia, Structural Engineers is a 170-person firm located in Boston, New York, Miami, Orlando, West Palm Beach, Denver, and Raleigh. We are fully committed to reducing the carbon impact of our structures and know we have a significant role to play in creating a sustainable future. We strive to reduce embodied carbon by using new technologies, design optimization methods, construction methods and materials and have signed on to the SE 2050 Commitment Program in order to advance this goal across the industry. We recognize sustainability is a holistic goal and are dedicated to working with our clients to achieve it on each project.

The SE 2050 Commitment is multifaceted with focus areas in education, reporting, reduction, and advocacy. It challenges engineers across the industry to join in reducing embodied carbon in our structures in order to be carbon neutral by the year 2050. This Embodied Carbon Action Plan (ECAP) lays out our steps for the upcoming year to meet the goals of the SE 2050 Commitment.

#### PREVIOUS YEAR LESSONS LEARNED:

As we enter into our second year in the SE 2050 program, we want to take stock of all we've learned in the first year. For our first project submission, we found it difficult to do accurately and efficiently gather embodied carbon data. A few of our team members utilized the Beacon Add-In while others did manual takeoffs with quantities extracted from our Revit models. Even with the help of these takeoffs, estimation of rebar quantity specifically was difficult since it varies widely depending on the element and the floor level. In addition, our typical details require additional rebar that is difficult to estimate.

We found it would be helpful to try and track quantities during a project design rather than all at the end. One idea was to partner with the sustainability consultant on the job to use their LCA results as part of our submission data to SE 2050. Another idea is to better communicate who is using LCA tools like Tally on jobs already and simply file that information in preparation for our submittal. The last idea is to collect data from concrete and steel suppliers for projects that have been constructed recently and use their final quantities in our data submission. Overall, our goal is to become more streamlined and accurate as we estimate embodied carbon on projects.

In terms of education and workflow we learned thinking about embodied carbon needs to be another constraint integrated into our design process and it will take some time to get used to this. We also found that our industry partners are open to reduction techniques, but they want to be part of the conversation rather than being directed on how to operate.



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## EDUCATION PLAN:

- We continue to encourage employees to continue educating themselves on SE 2050 and embodied carbon by directing them to the numerous resources on the SE 2050 website. We plan to present on the topic this fall in our internal education session, McSal.EDU. We have created a working library of resources on our network that is accessible to all employees and will be updated regularly with new research, reduction techniques, and miscellaneous tools related to calculating and reducing embodied carbon in structures.
- We will distribute this ECAP upon submission to the firm.
- AJ Unander, P.E., S.E. will continue this year as Embodied Carbon Champion. AJ is a Project Manager working in Denver, CO and has had an interest in embodied carbon since studying at MIT under one of the leading researchers in the topic. Patricia Aguiar (NYC), Astrid Matheus (Miami), Salvatore Cherone (Boston) and Walt Craig (Denver) have also joined the team to represent our various offices.
- Our SE 2050 committee will each attend a demo of an LCA-based tool to calculate embodied carbon.
- We plan to share and/or present the following documents with our staff and have already uploaded links of them to our Embodied Carbon resource folder:
  - SE 2050 Library of Resources
  - Top 10 Carbon Reducing Actions for Structural Engineers
  - How to calculate embodied carbon from IStructE

### KNOWLEDGE SHARING NARRATIVE:

- We intend to start a conversation about embodied carbon in the early stages of our new projects as the architect and developer are deciding on sustainability goals. We will share what we know, what we've learned from being a part of SE2050 and educate them on SE 2050 if they are unfamiliar.
- We will continue to update our website for new company initiatives related to embodied carbon and SE 2050.

### EMBODIED CARBON REDUCTION:

- We will build on what we learned in the first year and reevaluate our processes to make sure they are both accurate and efficient.
- We will begin to track how many projects require a minimum SCM content in concrete in project specifications.
- We will begin to track how many projects require EPD submittals for structural materials.
- We will begin to track how many projects are engaging in WBLCA (whether by us or by a third-party consultant).
- We will complete an embodied carbon comparison study during the project concept phase of an upcoming project.
- We will collaborate with a local concrete supplier to reduce embodied carbon in a mix design.

### REPORTING PLAN:

- We will submit a minimum of five (5) anonymous projects this year to the SE 2050 Database, with the goal of two projects per office.

### ADVOCACY:

- To accelerate embodied carbon reduction we first need to educate our staff and share the results of our reporting so they can understand the impact we have. As they learn more we expect them to share knowledge about embodied carbon reduction with our clients.
- We are already having conversations with clients who are interested in embodied carbon either as a way to gain LEED v4 points or to fulfill commitments they have made in reducing embodied carbon. We will continue to educate design team members on the topic, ways we can reduce, and the value of the SE 2050 Commitment. Since most of our clients have committed to AIA 2030, we anticipate a positive response as we promote SE 2050.
- We will revise our proposal language to include our commitment to SE 2050.
- We have added a [webpage](#) dedicated to sustainability and our pledge to the SE 2050 Commitment that will be visible to all who visit.