

DeSimone Embodied Carbon Action Plan, 2024

Prepared for

The Structural Engineering 2050 Initiative
And the Structural Engineering Institute
1801 Alexander Bell Drive
Reston, VA 20191



Prepared by

DeSimone Consulting Engineers
140 Broadway, 25th Floor
New York, NY 10005
T: 212.532.2211

DESIMONE

March 01st, 2024

Executive Summary

DeSimone recognizes the importance of reducing the carbon footprint of the built environment and supports the goal to reach net zero structural designs by 2050. To this end, we have created this embodied carbon action plan for our third year, beginning January 1, 2024.

Our strategy is to resource project teams to make win-win sustainable design decisions. Our plan is outlined according to the four initiatives below. DeSimone has created a Sustainable Design Team to take primary responsibility for implementing these initiatives.

- **Education** – We will engage our offices in sustainable design discussions focuses on embodied carbon, provide internal webinars, and grow our Sustainable Design Team.
- **Reporting** – We will perform five Life Cycle Assessments and report the results to SE 2050 and engage clients in embodied carbon goals for their projects.
- **Reduction** – We will develop a workflow for early design decisions based on embodied carbon, and collaborate with concrete suppliers to reduce embodied carbon for mix designs.
- **Advocacy and Knowledge Sharing** – We will engage with clients in discussions about SE 2050 and advocate for including reducing embodied carbon as one of the project goals.

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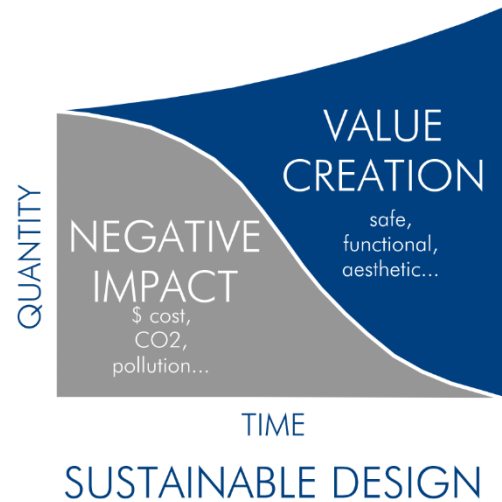
Why Sustainable Design

DeSimone recognizes the importance of reducing the carbon footprint of the built environment and believes that this should no longer be handled on a project-by-project basis. We envision a firm-wide movement and body of expertise. To this end we have created this Embodied Carbon Action Plan.

Our plan is informed by a positive view of humanity and the future. We believe that engineers can achieve net zero structural designs and will further innovate to create a world where humans and the biosphere flourish in harmony.

We define sustainable design as a process that maximizes value for all while minimizing negative impacts. In the context of our structures, this involves improving safety, adaptability, durability, functionality, and aesthetic while minimizing environmental and financial cost, among other factors.

Our strategy focuses on resourcing our engineers and partners to make win-win sustainable design decisions.



The Sustainable Design Team

DeSimone has created a Sustainable Design Team to advance the sustainability of DeSimone structures by curating resources that guide designers to select both sustainable materials and design techniques. Our initial focus is to reduce embodied carbon in accordance with the SE 2050 challenge. The team meets bi-weekly and is responsible for implementing the plan outlined in this document.

Four Initiatives

Our action plan is laid out according to the following four initiatives:

Education

We aim to arm all our engineers with the tools necessary to understand the sources of embodied carbon as they apply to all the different aspects of their projects, as well as tools to measure and reduce them. Our Sustainable Design Team is responsible for education implemented as follows:

- **Engaging Our Offices** – The Embodied Carbon Reduction Champion will engage embodied carbon reduction at each office through educational webinars and performing LCAs on select projects from each office.
- **Internal Webinars** – We will provide a minimum of (1) webinar focused on embodied carbon to employees covering the sources, measurement, and reduction.
- **Embodied Carbon Interest Group** – Our Sustainable Design Team will expand to include additional offices and hold scheduled discussions that aim to advance awareness within all employees as well as our carbon reduction tools.

Reporting

Our path to net zero will require consistent reductions in embodied carbon to be achieved every year. To track our progress towards net zero, we will measure the embodied carbon of our projects and report the results to SE 2050. Additionally, we believe it is essential to get our clients onboard with carbon reduction. Over the last year, we submitted (5) projects to the SE 2050 database. For the next year, our reporting goals will be as follows:

- **Project Submissions** – We will submit (5) total projects across our firm to SE 2050 Database in 2024.
- **Engaging Clients** – We will ask architects and owners about project carbon budgets or sustainability goals for a submitted project and explore alternatives for carbon reduction.

Reduction

Going into our 3rd year, we are proud to have developed sustainable specifications and general notes that have been distributed company-wide and have been integrated on a few projects. This next year, our reduction strategy is as follows.

- **Workflow for early decisions** – We will develop a workflow that makes it easier to make early design decisions based on embodied carbon.
- **Collaborate with concrete suppliers** – We will collaborate with our concrete suppliers to reduce embodied carbon in mix designs below baseline targets.

- **Research: Materials and Structural Systems** – We will research innovative and emerging technologies with regard to sustainability. We will keep the scope of our studies broad: material science of concrete, wood, steel, and composites; optimized structural systems; biophilic design; and carbon sequestration techniques, to name a few!

Advocacy and Knowledge Sharing

We recognize that embodied carbon reduction must be a universal goal within the industry, and to that end, we plan on sharing our knowledge outside of our firm in the following ways. Over the past year, we developed outward-facing documents that describe our capabilities in measuring and reducing embodied carbon, and we continue to share it with our clients. For the coming year, we aim to achieve the following:

- **Client Engagement** – we will engage with clients and describe the value of SE 2050 and the importance of reducing embodied carbon. Our team will aim to collaborate with other project stakeholders to include reducing embodied carbon as one of the project goals.
- **SE 2050 in Proposals** – We will declare ourselves an SE 2050 member in our boilerplate proposal language and invite conversation about making low carbon design part of the project goals.

Lessons Learned

Going into our third year of our commitment to SE2050, we have made several strides in our mission to reducing embodied carbon and become more aware of the challenges that face us engineers specifically and the industry in general.

Through knowledge sharing and increased client interest, a significantly larger number of DeSimone employees are attuned to the urgency of reducing embodied carbon and the tools available at hand. Our sustainable general notes and specifications have been successfully introduced on multiple projects, and our documentation of reduction strategies has helped to focus conversations with clients on efficient and cost-effective methods of reducing embodied carbon.

As we became more proficient in understanding the sources of embodied carbon and the reduction strategies available, we are increasingly aware of the challenges that face us on our road to achieving net zero. Client focus on embodied carbon is only but slowly growing. The causes vary, and could be due to a lack of awareness, insignificant focus on embodied carbon from mainstream green building certifications, and monetary and schedule related costs associated with studying embodied carbon and reducing it. Other challenges that we face are local limitations in alternative green materials. Despite these challenges, the movement continues to gain momentum and industry interest is increasing year on year.

Please reach out to us if you have any questions or ideas that can help.

Jarret Johnson
Sustainable Design Team Leader
Jarret.Johnson@de-simone.com
T. 617.344.9460