

DeSimone Embodied Carbon Action Plan, 2022

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

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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 the year beginning January 1, 2022.

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.

- **Educate** – We will host a Sustainable Design Teams channel, host four webinars, and will curate a Sustainable Design Library.
- **Report** – We will perform two Life Cycle Assessments and report the results to SE 2050.
- **Reduce** – We will establish a benchmark for the embodied carbon of our structures and research reduction strategies.
- **Advocate** – We will share our accumulated experience with the design community.

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

David Palmer
Sustainable Design Team Leader
David.Palmer@De-Simone.com
T. 440.241.3802

Contents

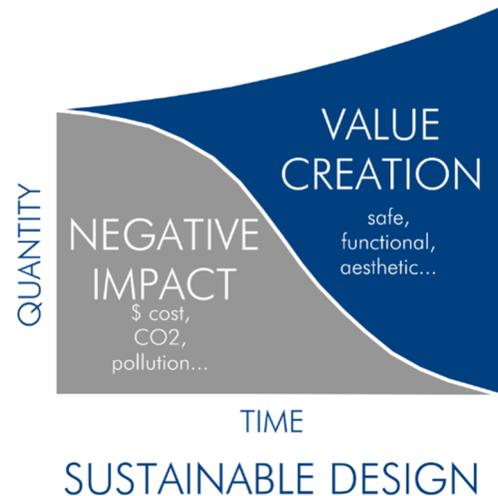
Executive Summary	1
Why Sustainable Design	3
The Sustainable Design Team	3
Four Initiatives	4
Educate	4
Report	4
Reduce	5
Advocate	5
Conclusion	6

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 for the year beginning January 1, 2022.

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. Current team members are shown below.



Tarek Abdallah
San Francisco



Houman Hadad
Miami



Solomon Ives
Las Vegas



Jarret Johnson
Boston



David Palmer
New York

Four Initiatives

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

Educate

Our Sustainable Design Team is responsible for education implemented as follows.

- **Sustainable Design Teams Channel** – This channel is a company-wide conversation about information, news, and technological advances around sustainable design, and serves as a forum for questions. Our Sustainable Design Team hosts the channel and posts bi-weekly to spark conversation and hype the movement.
- **Quarterly Webinars** – These webinars are hosted by our Sustainable Design Team and focus on sustainable design.
- **Sustainable Design Library** – Curated by the Sustainable Design Team, this collection of sustainable design resources will be anchored by two in-house summaries: DeSimone’s Embodied Carbon Basics and DeSimone’s Carbon-Reduction Strategies. These short form “cheat sheets” can be referenced as “go, no-go” lists early in projects to scan for opportunities when they are most easy to implement. Over time, we intend to link these summary sheets to a fuller long-form sustainable design library.

Report

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.

- **Life Cycle Assessments (LCA)** – A minimum of two (2) LCAs per year will be performed on our structural designs, covering phases A1-A3, or “cradle to gate”.
- **LCA Project Selection** – The intent is for project managers to volunteer their projects and perform the assessments themselves. The Sustainable Design Team will encourage participation, review LCA’s for accuracy, and upload results to the SE 2050 site.
- **LCA Software** – The LCA process will utilize DeSimone ECO, our internally developed LCA tool. This tool allows for material quantity inputs and gives embodied carbon as the output. DeSimone ECO is based on Environmental Product Declarations.

- **Training** – Engineers at DeSimone will be given a training guide for DeSimone ECO and will be presented with information on embodied carbon and a demonstration of DeSimone ECO through a webinar.

Reduce

We plan to adopt a multi-faceted strategy to reduce the carbon footprint of our structures. Our solution is broken down as follows:

- **Carbon Benchmark** – We will establish a carbon benchmark for our projects to serve as a reference point from which our progress in reducing carbon emissions will be measured. Our benchmark will inform reasonable embodied carbon targets for future projects.
- **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!
- **Specifications** – We will draft sample low-carbon material specifications and general notes for easy implementation by engineers on projects.

Advocate

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:

- **Marketing Outreach** – We will prepare brochures for clients highlighting the benefits of carbon reduction and recommended steps forward for various project types.
- **SE 2050 Declaration** – We will declare ourselves an SE 2050 member on our website, standard marketing materials, and proposals.
- **Presentations** – We will deliver one presentation to clients focused on carbon reduction strategies and benefits.

Conclusion

We believe in a bright future and a more sustainable world. Without action, however, this is not guaranteed. Please reach out to our Sustainable Design Team with any ideas, questions, or resources that might help with this effort.

We are always looking to grow our knowledge through collaboration, especially across disciplines. We love having video chats about carbon basics and reduction strategies. You can reach our Sustainable Design Team via the contact info below.

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T. 440.241.3802