

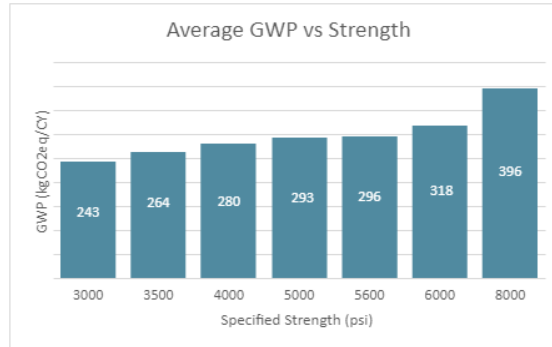


SE 2050 COMMITMENT

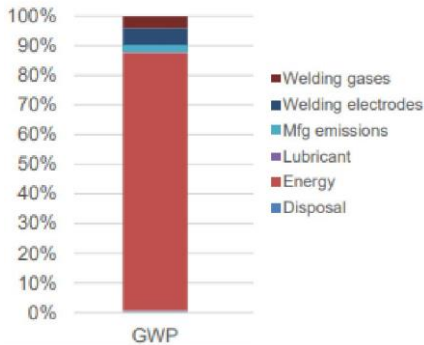
EDUCATION: Understanding how building materials contribute to greenhouse gas emissions.
REPORTING: Developing in-house tools to create SE 2050 compatible database
REDUCTION: Developing key actions to reduce embodied carbon.
ADVOCACY: Developing educational opportunities to share the value of EC reduction with our clients.

CONCRETE

**INTRODUCING GWP AVERAGE
LIMITS FOR CONCRETE MIXES**



UNDERSTANDING AISC EPD FABRICATED HSS GWP COMPONENTS



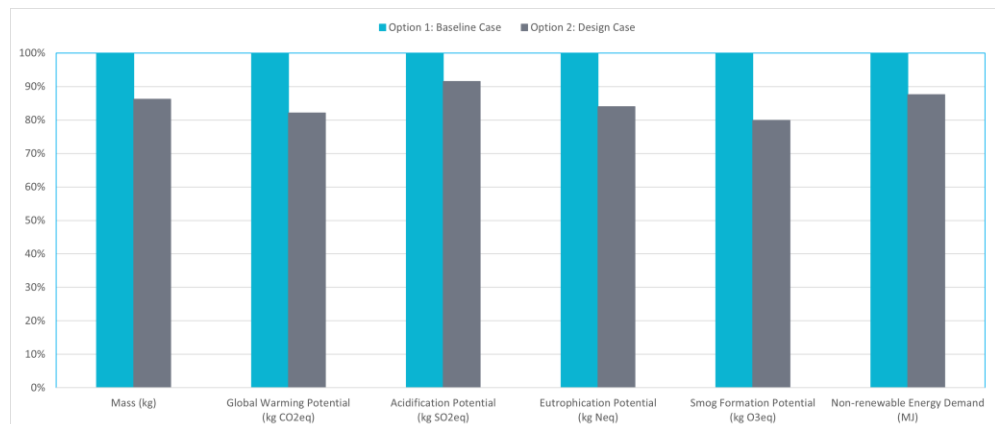
STEEL

**INTRODUCING MINIMUM
RECYCLED STEEL CONTENT IN
SPECIFICATIONS**



LCA

**PERFORMING CRADLE-TO-
GATE TALLY ASSESSMENT**



Embodied Carbon Action Plan V1.0

SE 2050 COMMITMENT





SE 2050 COMMITMENT

EMBODIED CARBON ACTION PLAN V1.0

Executive Summary

This document intends to outline Datum's Embodied Carbon Action Plan (ECAP) summarizing the internal practices for the year 2021 to launch our efforts for the SEI SE 2050 goals through the following:

- Education: Understanding how building materials contribute to greenhouse gas emissions, and how we as structural engineers can help reduce these emissions associated with structural systems.
- Reporting Strategies: Developing in-house tools and methodologies to create databases compatible with SE 2050 database
- Embodied Carbon Reduction Strategies: Developing key actions and laying out design strategies to reduce embodied carbon.
- Advocacy: Developing educational opportunities to share the value of EC reduction with our clients and share the knowledge to accelerate the adoption of SE 2050 commitment.

CONTENTS

Introduction.....	4
Education.....	5
Reporting.....	7
Embodied Carbon Reduction Strategies.....	8
Advocacy.....	10
Appendix.....	12



Introduction

Founded in 1937, Datum has grown into a regional leader in structural engineering and to this day, Datum remains committed to building on our legacy of design excellence, cultivating a passion for architecture and practicing the Art of Structural Engineering.

Datum has an experienced team, many of whom have worked together for more than 20 years. We are dedicated professionals who are committed to our clients and to excellence in our work. We employ over 30 licensed engineers and other professionals in three offices throughout Texas and work on signature projects nationwide.

Datum recognizes its responsibility in helping the building design community address the climate change issues and the impacts that our structural systems have on the environment. To help reach collective industry sustainability goals, we have established a Sustainability Chapter across our three offices. Datum supports the SE 2050 initiative by Structural Engineering Institute and Carbon Leadership Forum and will work toward the goal of the net-zero embodied carbon by 2050.

Education

Requirements

1. **Distribute a firm-wide announcement of Datum pledging to joining the SEI SE 2050 Commitment.**
 - a. Datum has sent an internal email announcing Datum's commitment to SEI SE 2050. (See Exhibit A)
 - b. Datum sent a notice to our clients announcing the commitment.
2. **Provide a brief narrative describing how Datum promotes a firm-wide education program for embodied carbon reduction and the firm's commitment to SEI SE 2050.**
 - a. Datum has monthly engineering meetings where the internal sustainability team presented their white papers on EC in various materials and scorekeeping tools. The team will continue to share resources during the monthly meetings and present external webinars when required.
 - b. Webinars by external organizations related to embodied carbon will be attended by the sustainability team members and will be presented and made available to the entire company.
3. **Nominate an Embodied Carbon Reduction Champion for Datum.**
 - a. Swarna Karuppiah, located within Austin office, has been appointed as the embodied carbon reduction champion for Datum. (See Exhibit B for her profile and contact)
 - b. Roles & Responsibilities:
 - i. Keep track of education on embodied carbon – attend webinars/seminars, workshops or conferences.
 - ii. Conduct focussed group discussions on EC strategies.
 - iii. Develop in-house tools with the Datum's sustainability chapter to strategize reporting.
 - iv. Share all resources from SE 2050 website firm-wide.
 - v. Coordinate ECAP progress between all the three offices.
 - vi. Make annual updates to the ECAP documentation.
 - vii. Develop a feedback system on the commitment program to address any improvements if needed.
 - viii. Identify and promote advocacy opportunities within our AEC community and universities.
4. **Set a date within the first year of Datum's commitment to present an "Embodied Carbon 101" webinar.**
 - a. The webinar was presented on November 8th, 2021 (See Exhibit A)

- b. More webinars will be presented on EC and its measurement tools in 2022 to broaden our understanding on embodied carbon practices by structural community.

Electives

- ✓ Share embodied carbon reduction strategies with your firm as outlined in Top 10 Carbon Reducing Actions for Structural Engineers document produced by SE 2050.
- ✓ Have one representative of your firm (any employee) attend quarterly external education programs (e.g. webinar, workshop) provided by SE 2050, Carbon Leadership Forum (CLF), or other embodied carbon resources.
- ✓ Share the SE 2050 library of resources with technical staff.
- ☐ Nominate a minimum of (1) employee per office to participate in a CLF Community Hub.
- ✓ Provide narrative outlining plans for minimum (2) firm-wide presentations per year on the topic of embodied carbon. **See Exhibit C**
- ✓ Present the document, "How to measure and report embodied carbon" to all the technical staff.
- ✓ Attend a presentation or demo of an LCA-based tool used to calculate embodied carbon.
- ✓ Initiate an embodied carbon interest group within your firm and provide a narrative of their goals. **See Exhibit D**
- ☐ Provide a narrative of how the Embodied Carbon Reduction Champion will engage embodied carbon reduction at each office. (intended for multi-office firms).
- ☐ Other actions you feel appropriate and a narrative for why.

Reporting

Requirements

1. Provide a narrative on how your firm plans to measure, track, and report embodied carbon data.
 - a. Datum will perform LCA for the phases A1 to A3.
 - b. Datum will be calculating EC for structural materials using the Tally LCA tool as it allows us to easily coordinate with our clients who use similar tools. We will extract quantities through Revit model using Tally during the DD and/or CD phase.
 - c. An internal white paper on EC measurement is under development to be completed by mid-2022.
2. Describe the internal training for embodied carbon measurement you provided or will provide.
 - a. Datum's internal sustainability team has presented a white paper on Scorekeeping and LCA tools.
 - b. The LCA tool, Tally, will be available to internal staff members for EC measurement.
 - c. A webinar on Tally will be presented to the staff to develop a basic understanding on the tool to perform LCA on different types of projects depending on the building functions and materials.
3. Submit an annual minimum of (2) projects per US structural office but need not exceed (5) total projects for the firm to the SE 2050 Database
 - a. Datum will attempt to perform LCAs on the most representative projects and will be submitting 2 projects for the first year.
 - b. Following the first year, Datum will submit one additional project from the preceeding year and a maximum of 5 projects towards the SE 2050 database.

Electives

- ☐ Submit all projects to the SE 2050 Database
- ☐ Meet your target average embodied carbon reduction from the previous year.
- ☐ Report a greater percentage of projects than the preceding year.
- ☐ For a project submitted to the database, ask the Architect or Owner if the project has a carbon budget or if there are established project sustainability goals at the project kickoff meeting.
- ☐ Other actions you feel appropriate and a narrative for why.

Embodied Carbon Reduction Strategies

Requirements

1. Set an EC reduction goal for the coming year and an implementation narrative. Qualitative goals focused on education are appropriate for the first year.
 - a. As part of the first year commitment, the goal is to educate ourselves on what EC is, how to measure it, the tools available and how to apply those tools in our projects. The EC reduction targets will be set during the second year of commitment and will be compared with CLF and SE 2050 benchmark targets and adjusted accordingly.
 - b. Once the EC reduction goal is set during the second year of commitment, at least two projects per year will achieve the target to reduce EC and the following electives shall be applied to each one of those projects.
2. For second year's ECAP and beyond, provide a narrative about what you have learned about embodied carbon reduction in the past year. Describe successes and misses to help the program improve.
 - a. The narrative will be included in the second year ECAP. At the end of each year of commitment, updates will be made to the ECAP to incorporate the learnings and improve the methodology to approach the carbon neutrality goals.
 - b. For the second year ECAP, a new version of this document will be released and submitted.
3. Minimum (1) additional elective you undertook to reduce embodied carbon in your designs, why you chose the elective and its significance.
 - a. The current elective chosen is to improve the specifications to incorporate ways to reduce EC reduction. The improvement in the specifications will be ongoing throughout the commitment program.
 - b. More electives will be chosen as we layout goals and will try to add one additional elective each year.

Electives

- ☐ Incorporate data visualization into your ECAP. How are you looking at data to make informed design decisions and communicate design options to your clients?
- ☐ Provide a project case study in your ECAP that captures a reduction of embodied carbon or some lessons learned.
- ☐ Create a project-specific embodied carbon reduction plan.
- ☐ Complete a system embodied carbon design comparison study during the project concept phase.

- ☐ Participate in a project LEED design charrette and speak to potential design considerations impacting embodied carbon.
- ☐ Calculate your firm average benchmark for embodied carbon.
- ☒ Update your specifications and incorporate embodied carbon performance. Include embodied carbon in your submittal review requirements. **In Progress**
- ☐ Get a new Environmental Product Declaration (EPD) created on a project.
- ☐ Incorporate biogenic materials on at least one project annually.
- ☐ Collaborate with your concrete supplier to reduce embodied carbon in a mix design.
- ☐ Provide a narrative of how circular economy has been used on your projects. Incorporate re-use or design for deconstruction into at least one project.
- ☐ Work with a contractor during material procurement to meet an embodied carbon performance criteria on at least (1) project.
- ☐ Quantify construction waste reduction on a project and the impact to embodied carbon.
- ☐ Integrate embodied carbon mitigation strategies in your General Notes.
- ☐ Other actions you feel appropriate and a narrative for why.

Advocacy

Requirements

1. Provide a narrative about how you plan to share knowledge and data to accelerate adoption of embodied carbon reduction.
 - a. Datum has distributed announcements internally and to our clients informing them about our commitment towards carbon-neutrality.
 - b. Datum has also shared our commitment through a Dallas newspaper publication to encourage the structural firms in Texas to come forward and take part in changing the trajectory of building design.
 - c. Datum has shared our commitment on LinkedIn to accelerate the adoption of the commitment program.
 - d. Datum will advocate its inclusion via social media platforms and presentations to our clients and other stakeholders where embodied carbon is not addressed.
2. Describe the value of SE 2050 to clients. How can we collaborate to drive adoption? At your option, attach any associated marketing materials.
 - a. Datum will engage in EC reduction conversation with sustainability advisors from various client firms and collaborate with their AIA 2030 goals and will also engage in conversation with MEP consultants to achieve their commitment towards MEP 2040 goals and other stakeholders involved to achieve this collective goal of net zero carbon emissions.
 - b. Datum will seek opportunities to organize presentations on the value of the SE2050 commitment to clients who are working towards the same mission of improving building design and construction practices to tackle climate change impacts.
3. Declare your firm as a member of the SE 2050 commitment on boilerplate proposal language.
 - a. Datum will declare our participation in SE 2050 in our project proposals and will work with the clients and owners to find more opportunities to address the reduction of embodied carbon and make decisions keeping in mind the sustainability goals of the projects.
 - b. Datum will engage in conversation with our clients early-on and set EC goals and seek opportunities to include life cycle assessment services as part of the project scope.

Electives

- ☒ Share your commitment to SE 2050 on your company website.

- ☐ Give an external presentation on embodied carbon that demonstrates a project success or lessons learned (Tip: Get connected at a CLF local hub near you!).
- ☐ Discuss with the Owner / Client the option of requiring that some of the structural materials come with facility-specific or product-specific EPDs.
- ☐ Share education opportunities with clients.
- ☐ Provide a narrative of how you have encouraged industry and policy change incentivizing availability of low-carbon and carbon sequestration materials.
- ☒ Start an embodied carbon community of practice or mentorship program in your office. **In**

Progress

- ☐ Mentor a firm new to the embodied carbon space.
- ☐ Other action you feel appropriate and a narrative for why.

Appendix

Exhibit A

I'm thrilled to announce that we have officially named Swarna Karuppiyah, PE, as Datum's Sustainability Champion.

This is an area of our practice and our industry that is growing in importance – and for good reason. Swarna played an important role in our successful Sustainability 1.0 efforts, and is actively working on version 2.0 to raise our game in being able to execute Life Cycle Cost Assessments on our projects to measure performance and help our clients achieve sustainability goals.

Swarna also took the initiative and prompted us to sign on to the [SE2050 Commitment](#) in its first full year, pledging to work collaboratively in our industry to reduce embodied carbon in our projects to net-zero by the year 2050. This is a big deal. It's ambitious, and it's the right thing to do as stewards of the world we live in. Swarna will be sharing more about what this means for us at the Engineering Roundtable meeting (everyone is invited) on Monday, November 8 at noon.

We will be making an announcement for the world outside our walls, but I wanted you to hear it here first.

Thanks, Swarna, for your initiative and efforts.



Exhibit B

Associate

✉ swarna@datumengineers.com

Swarna joined Datum in 2016 and was recently promoted to Associate. She has a can-do attitude and is dedicated to her profession and her role in the firm. She has gained valuable experience in the design of cultural buildings, office, healthcare, and research facilities. Her project experience includes; The Dallas Holocaust Museum, Highland Park Presbyterian Church, BSA Harrington Cancer Center, and Texas A&M University MREB 2. She has been very active in several professional organizations including; Leadership Collective, Austin Chapter of AIA, Sustainability and SE 2050 Committee Member, ASCE, and awarded the NCSEA Young Member Summit Scholarship.

Swarna received her Bachelor of Science in Civil Engineering from Indian Institute of Technology, and her Master's in Structural Engineering at the University of Southern California.

Exhibit C

Minimum (2) firm-wide presentations per year on the topic of embodied carbon.

- Webinar 1: Embodied Carbon 101 Webinar
- Webinar 2: Getting started in Tally (<https://choosetally.com/webinars/>)
- Webinar 3: Reducing Embodied Carbon with EC3 using Tally Assessment
- Webinar 4: Green Rating Systems
- More webinars to be determined.

Exhibit D

Embodied Carbon Interest Group Mission:

- Monthly educational meetings to be conducted and strategize on resource developments like White Paper, Tally Learning and other resources available.
- Review of ECAP documentation for annual updates and address any improvements if needed.
- Coordinate advocacy efforts within the interest group to reach out their respective project teams.