STRUCTURAL ENGINEERING INSTITUTE

SE2050 COMMITTING TO NET ZERO

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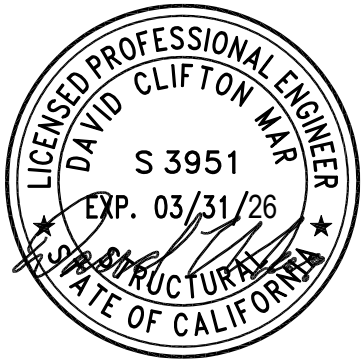
SE2050: Embodied Carbon Action Plan

Mar 31, 2025



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Education Plan

An outline of your firm's strategy to educate employees about embodied carbon. This internally focused communication is meant to empower your firm to take action within the scope of your commitment and beyond.

We will provide training sessions to explain how embodied carbon is measured for construction projects, and how we limit embodied carbon on our projects.

- 1hr PowerPoint presentation/training
- Spreadsheets to calculate embodied carbon
- Bill of materials or material take-offs pulled from Revit models
- Comparison to industry standard embodied carbon

Knowledge Sharing Narrative

An outline of your firm's strategy to communicate your embodied carbon reduction work externally. This includes communicating your firm's efforts, successes, and lessons learned with clients, the design community, and the public.

We will communicate our embodied carbon work externally in the following ways:

- LinkedIn posts
- Communication at the beginning of projects to architects & owners that we are making an effort to reduce embodied carbon, and inviting other design professionals on each project to also make reductions
- We can show clients a comparison between our designs and industry standard designs to show what the extra effort achieves.

Reduction Strategy

Specific and measurable goals to assess your firm's process in reducing embodied carbon in project work. You will have access to the SE 2050 project database and program resources to identify and set reduction strategies. For the first year, this may be focused on tracking embodied carbon on all projects since you may not have established a baseline yet.

Our reduction strategy will incorporate the following:

- 25% reduction in embodied carbon in concrete compared to benchmark designs.
- Improve on last year's average by 1%-3%

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Reporting Plan

A description of how your firm will measure, track, and report embodied carbon data. This should include a scope of how detailed your accounting will be and how many projects will be measured - a minimum of (2) projects per U.S. structural engineering office, not required to exceed 5 per firm per year. This plan should answer questions like:

How will you calculate embodied carbon for structural materials?

- By Volume/weight

Do you have access to product- or region-specific Environmental Product Declarations (EPDs)?

- Large local suppliers like Central Concrete will have these
- In some cases product specific EPDs are produced by industry groups

What life-cycle assessment (LCA) software(s) will you be using to quantify embodied carbon?

- Free software (openLCA.org) or our own models at first.
- Maybe we can get more complicated after the first year

What is the scope of your LCA (e.g. A1-A5, A-C, A-D)?

- Initially our LCA and embodied carbon data will only include what we have control/good data over: A1: Building Materials.
- We need to get to including A1 through A5, this is considered a minimum, and we need to set a due date to get here.

Product Stage			Construction Process Stage		Use Stage							End-of-Life Stage				Benefits and loads beyond the system boundary		
Raw material supply	Transport	Manufacturing	Transport to building site	Installation into building	Use/application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D

How will you calculate material quantities and at which project stages?

- We will calculate material quantities during the design phase only. We do not have enough control or ability to collect data during construction or operation of buildings. We will just used assumed values for other stages.
- The primary method of calculating material quantities during the design phase will be accurate modeling in Revit, and automatic material take-offs in Revit.
- Public projects may have estimates with quantities

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Elective Documentation

This document is a description of the electives your firm completed or intends to complete in the year of this ECAP submission. It is perfectly acceptable to change electives between ECAP submission and the end of year, but be sure to reflect on this in the Lesson Learned section the following year. The four categories of elective are listed below with descriptions of all available electives in the following pages.

Education (2) required, (4) recommended

- Distribute ECAP within your firm upon publishing
- Make (1) webinar focused on embodied carbon available to employees.
  - This will just be a recorded version of our training mentioned in the education plan

Reporting (1) required, (2) recommended

- Submit a minimum of (2) projects per U.S. office with structural engineering services to the SE 2050 Database. You are not required to submit more than (5) total projects across your firm.

Reduction (1) required, (4) recommended

- Calculate your firm average benchmark for embodied carbon.

Advocacy (2) required, (4) recommended

- Describe the value of SE 2050 to clients. How can your design teams collaborate to reduce embodied carbon? Please attach any associated marketing materials
- Declare your firm as a member of the SE 2050 Commitment with boilerplate proposal language

Lessons Learned

A summary of what you have learned as a firm over the previous year of embodied carbon reduction. Use this to inform your strategies for the coming year.

The main lesson learned is that is is very easy to get embodied carbon data for concrete for a building, and much harder to get embodied carbon data for light gauge steel or wood framing. It has also become clear that life cycle analyses are more difficult to estimate the further into the life cycle of a material you go.