



2025 EMBODIED CARBON ACTION PLAN (ECAP)



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WHO WE ARE

Since 1974, we've been dedicated to designing new and revitalized places to live, work, learn, heal, and play throughout Northern California and beyond. As a small firm with a large firm feel, we continue to learn new skills, grow our business, and stay curious about engineering and the built environment—including how we can design structures with environmental impacts in mind.



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OUR COMMITMENT

Trefethen Family Vinyards Napa, CA Photo Courtesy of <u>Adrian Gregorutti</u> ZFA Structural Engineers has joined SE2050. We have committed to reducing embodied carbon in the design of structural systems.

As we increasingly observe the effects of climate change in everyday life, we understand the urgent need to reduce our carbon emissions and strive for net zero. Since 1974, ZFA has been designing new and revitalizing places to live, work, learn, heal, and play. In recent years we have leveraged our experience and motivation for sustainability by educating ourselves on emerging technologies and implementing solutions like optimum value engineering wood framing, low-carbon concrete, and cross-laminated timber.

Moreover, at ZFA, we are astutely aware of how our work impacts the community around us. Our past work with organizations such as Rebuilding Together, Bay Build, and Engineers Alliance for the Arts has helped us to understand the responsibility we have as engineers. Committing to this initiative is an effective first step towards introducing carbon-reduction strategies into our practice on our journey to become stewards of the environment.

We understand that the 2050 goals cannot be achieved alone and are eager to collaborate with other firms to harness our collective experience. ZFA commits to lending our expertise to make a meaningful and tangible contribution to the 2050 goals.

EMBODIED CARBON ACTION PLAN 2025



Lindsey Broderick, PE Senior Engineer Embodied Carbon Champion



Benny Cope Designer



Andrew Twardowski, PE Senior Engineer



Nick Reid, SE Principal



Angie Sommer, SE Principal Marketing Lead

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EDUCATION PLAN



We aim to continue and expand our education initiatives further this year by focusing on the following initiatives:

- Expand and formalize our internal database of technical resources and disseminate to staff.
- Provide company-wide internal training on embodied carbon including highlighting the SE 2050 program. Training will touch on the main SE 2050 pillars of Education, Reduction, Reporting and Advocacy and build upon the trainings developed thus far.
- Expand our knowledge of LCA software, analysis methods and data visualization techniques.
- Further educate ourselves on local embodied carbon related code provisions and regulations including compliance methodologies.
- Familiarize ourselves with upcoming changes to embodied carbon related code provisions.

EMBODIED CARBON ACTION PLAN 2025

KNOWLEDGE SHARING

Allyn Avenue Residence St. Helena CA Photo Courtesy of Technical Imagery ZFA will continue to share knowledge both internally and externally in an effort to achieve SE 2050's goals. Internally, we will work in earnest to implement, monitor and optimize our education initiatives.

Externally, we plan to be stewards of the program by sharing knowledge with our collaboration partners. We have identified the following initiatives:

- Identify opportunities to educate clients on embodied carbon, reduction strategies and our commitment to the SE 2050 program.
- Engage in design charettes centered around project sustainability goals.

Lastly, we will continue to share lessons learned and best practices with internal and external teams.

REDUCTION STRATEGY

ZFA's main focus in 2025 will be developing a firm-wide baseline database with the LCA data we have been collecting over the past couple of years with the goal of creating meaningful and attainable long-terms reduction goals. Our baselining efforts will include data across project types, construction materials and project phases.

Other reduction initiatives will include:

Sonoma Academy Performing Arts Center Architecture by Quattrocchi Kwok Architects

• Identifying project-specific reduction goals.

• Identify projects in which LCA's may be provided throughout the life of the project to better understand how design decisions impact embodied carbon in structural systems.

• Conduct LCA's during early design phases for three projects to compare structural systems being evaluated to inform design decisions. ZFA will continue measuring, tracking and reporting embodied carbon data over 2025 with the intention of integrating these practices long-term into our project workflow.

- ZFA will continue to conduct LCA's throughout 2025 and beyond.
 - We are committed to providing a minimum of (5) LCA's for 2025 with projects that strategically represent different ZFA offices, construction types and materials and business lines.
- LCA's will be performed using software including BimCAT, Athena Impact Estimator and hand calculations.
 - ZFA will endeavor to expand our knowledge and usage of other software.
- The scope of our LCA's will either be stages A1-A3 or A-C contingent on the software and project scope. If data for other stages is available, we will seek to interpret the data and how it might be used for future reduction goals.
- Material quantities will be calculated using both Revit and material take-offs by hand.
- Embodied carbon will be determined by leveraging the EC3 database. We will also start our own library of EPD's to understanding local supplied EPD availability.
- Develop standard method of data visualization for LCA's performed.

REPORTING PLAN

ELECTIVE DOCUMENTATION

EDUCATION

- Since joining the program, ZFA has provided at least one firm-wide training per year with recordings provided to Employees, including new Employees.
 - ZFA is committed to continuing our education effort by provided one company-wide training that serves as a continuation of previous webinars.
- This year, we are seeking to train more employees on how to perform LCA's with the goal to have a LCA Champion in each of ZFA's offices.
- Externally, ZFA will engage with the wider community by continuing to attend events hosted by CLF San Francisco and AIA.

REPORTING

- Continue providing LCA data to the SE 2050 database for a minimum of (5) projects.
- Include all structural quantities in SE 2050 database submissions.

REDUCTION

- Develop target reduction goals with a 1 year and 5 year horizon.
- Develop and implement a workflow that makes it easier to make early design decisions based on embodied carbon.

ADVOCACY

- ZFA will continue to describe and communicate the value of reducing embodied carbon to clients
- ZFA has and will continue highlighting our participation in the SE 2050 program via our webpage and LinkedIn posts.
- ZFA will look for more opportunities to conduct whole building LCA's with cross-functional design teams to understand how we can reduce embodied carbon and provide value to clients.
- Further identify opportunities to educate clients on SE 2050, embodied carbon and reduction strategies.

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LESSONS LEARNED

We learned that in order to move the needle and spur meaningful change to reduce embodied carbon in our structural systems, we need to stay diligent and intentional in our efforts. This includes prioritizing internal baselining of our projects to better understand how we can further reduce embodied carbon.

Furthermore, embodied carbon reduction in the built environment is a constantly evolving landscape consisting of new technology, policy and knowledge. Constant learning and knowledge sharing both internally and externally—is crucial to our collective success as a company and industry.



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