

ZFA
STRUCTURAL
ENGINEERS

2024
EMBODIED
CARBON
ACTION
PLAN
(ECAP)



Zero Energy House
Mill Valley, CA

Photo Courtesy of [361 Architecture](#)

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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.



FIRM SNAPSHOT

89

Employees in five offices

26

Licensed Structural Engineers (SE)

9

LEED Accredited Professionals

PEOPLE ↗
WORK ↗
SOLUTIONS ↗
zfa.com



OUR COMMITMENT



Palm Avenue Residence
Sebastopol, CA

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.

2023
ZFA SUSTAINABILITY LEADERS



Lindsey Broderick, PE
Senior Engineer
Embodied Carbon Champion



Benny Cope
Designer



Andrew Twardowski, PE
Senior Engineer



Nick Reid, SE
Principal
Chief Technology Officer



Angie Sommer, SE
Principal
Marketing Lead



OUR PLAN

Allyn Avenue Residence
St Helena, CA



- Quantify the environmental impact of our projects
- Work towards establishing a baseline for new projects
- Educate our engineers on the impacts of embodied carbon and strategies we can employ to reduce quantities from materials used in our projects
- Stay current on emerging carbon-reducing technologies
- Provide value to our clients by empowering them to make more sustainable design decisions

EDUCATION PLAN OVERVIEW



INTERNAL

LIFE-CYCLE ANALYSIS RESULTS

Updates on completed life cycle analyses, incorporating lessons learned, will be shared at Engineering Training Day each year.

CARBON REDUCTION STRATEGIES

Each office's Carbon Reduction Champion will share strategies to implement in design that embrace the concepts of "reduce," "reuse," and "maintain."



EXTERNAL

QUARTERLY SE2050 TRAININGS

Embodied Carbon Champion, Lindsey Broderick, will attend quarterly trainings provided by SE2050 leaders, as part of one of our program electives.

TECHNOLOGIES & RESOURCES

Resources, including the SE2050 Library, related to embodied carbon will be disseminated throughout ZFA as well as on our website.

REDUCTION STRATEGY

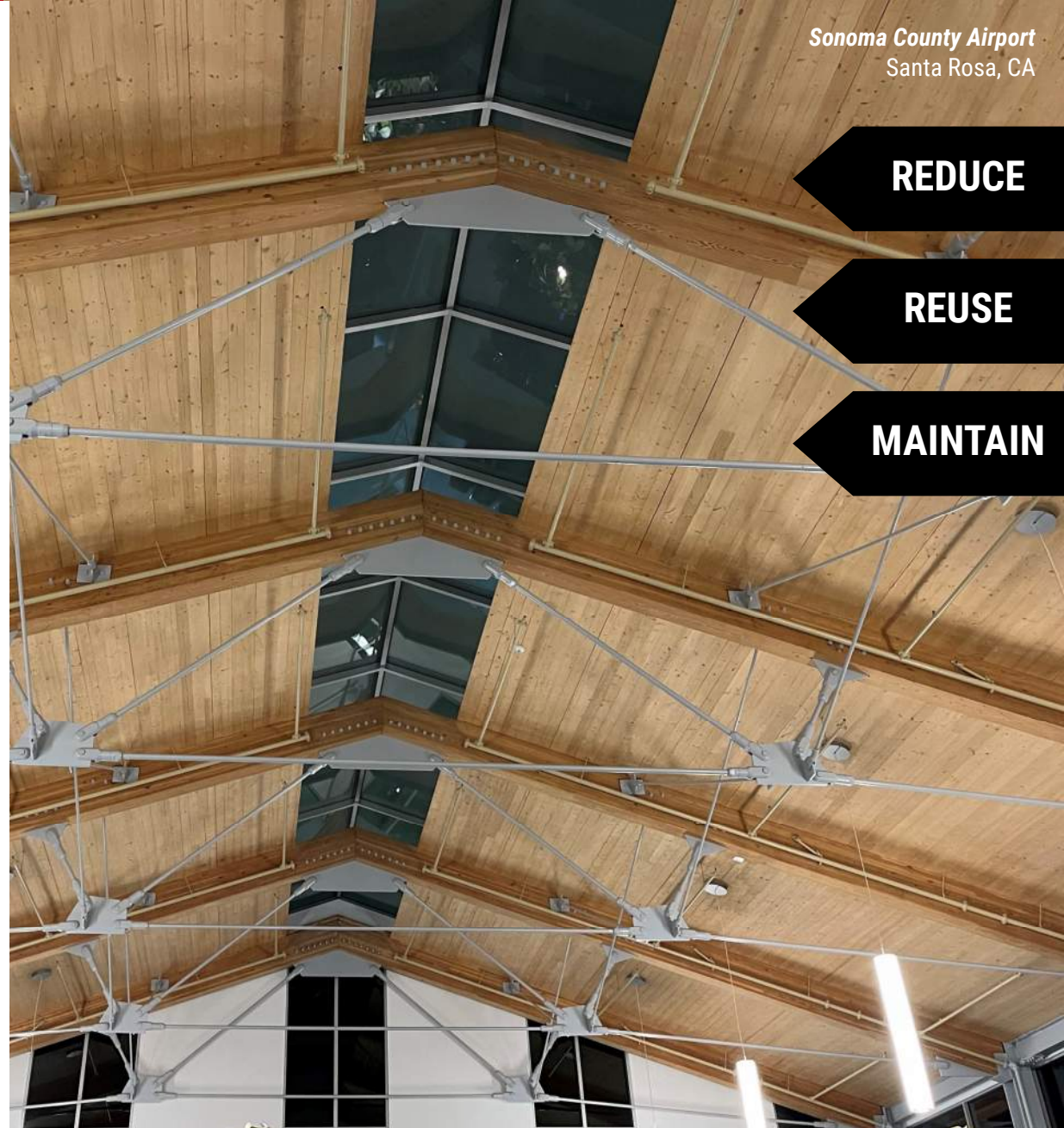
For 2024, we will be focused on tracking embodied carbon on a variety of completed and in progress projects to establish a baseline. Once we have an understanding of the amount of embodied carbon in the different project sectors and types of construction we are involved in, we will set a specific reduction target and timeline.

Specific actions planned (or taken) towards reducing embodied carbon:

- Conduct at least (5) LCAs over (2) or more project sectors.
- Work with concrete suppliers to identify additional ways to reduce the impact of concrete mixes, in addition to the partial replacement of Portland cement with lower impact cementitious materials already required by our current specifications.
- Develop our knowledge base in engineering technologies with lower embodied carbon. Specific areas of interest include:

- PT concrete
- High strength reinforcement in concrete
- Mass timber and CLT

Sonoma County Airport
Santa Rosa, CA



REDUCE

REUSE

MAINTAIN

ELECTIVE DOCUMENTATION

EDUCATION

- Distribute ECAP within firm upon publishing
- Make (1) webinar focused on embodied carbon available to employees
- Lindsey will attend quarterly external education programs provided by SE2050, Carbon Leadership Forum (CLF), or other embodied carbon resources
- Distribute SE2050 library of resources to engineers
- Share embodied carbon reduction strategies with your firm as outlined in Top 10 Carbon Reducing Actions for Structural Engineers document produced by SE2050
- Send Lindsey to participate in a CLF Community Hub and/or task force
- Send Benny to attend a presentation or demo of an LCA-based tool used to calculate embodied carbon



REPORTING

- Submit (5) projects with completed Life Cycle Analyses to the SE2050 Database in 2023.
- Submit a greater percentage of projects in following years



ELECTIVE DOCUMENTATION

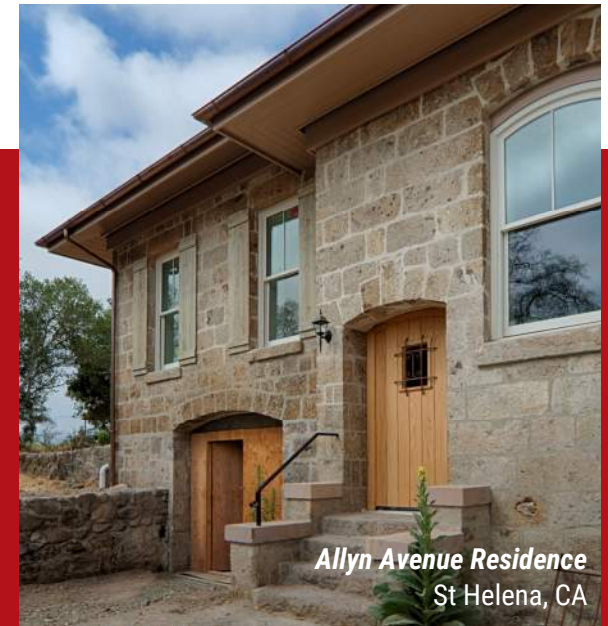
ADVOCACY

- Develop marketing materials describing the value of SE2050 and ZFA's commitment to the program
- Update internal proposal language to include ZFAs commitment as a member of SE2050
- Upload SE2050 commitment letter and ECAP on the ZFA website
- Share education opportunities with clients.



REDUCTION

- Develop a project case study sharing embodied carbon reduction successes and lessons learned
- Identify a project on which to complete an embodied carbon comparison study during project concept phase



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