

EMBODIED CARBON ACTION PLAN (ECAP)

STRUCTURAL ENGINEERS 2050 (SE 2050) COMMITMENT PROGRAM
2025



LIONAKIS



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INTRODUCTION

Lionakis' Embodied Carbon Action Plan (ECAP) has been developed to facilitate the Structural Engineers 2050 (SE 2050) Commitment Program. The aim of this plan is to promote net zero carbon structural engineering practices and progress towards achieving Net Zero Carbon structural systems. This document serves as a guide to achieving that objective. The primary goal we have as a firm is to tackle five crucial areas: education, engagement, reduction, reporting, and advocacy.

With over a century of experience and multidisciplinary services offered across our various offices in California, Lionakis is a leader in structural engineering and architecture. Lionakis acknowledges the environmental impact of structural designs and is committed to reducing the embodied carbon present in the built environment. Our responsibility will be to take an active role in sustainable building practices through structural engineering components. The focus for us is climatic impact associated with structural designs, and which strategies, tools, methodologies, and data are essential for the needed reduction or an offset in global greenhouse gas emissions.

At Lionakis, our mission is Designing a Better Future and we strive to deliver designs that are sustainable, inspiring, and suitable for any project.

We, at Lionakis, support and recognize the importance behind Structural Engineers fully understanding and making efforts toward eliminating embodied carbon in projects. Often engineers focus only on elements that they can effect as structural engineers. As a multi-disciplinary firm we realize we can influence and contribute to more than just the structural system.

WHO ARE WE

About Us

Lionakis was established in 1909 and founded by the first California State Architect, George Sellon. With more than 195 employees, Lionakis is a multi-discipline firm specializing in structural engineering, architecture, and interior design services. Building on more than a century of diverse project experience, Lionakis excels at providing solutions for healthcare, educational, civic and commercial clients.

Our Structural Engineering Team

Lionakis has been providing structural engineering services since 1957. Over the last 60+ years, the firm's structural engineers have provided design, evaluation, and peer review services for thousands of civic, education, commercial and healthcare projects throughout California. We have 19 professionals on staff in our Structural Engineering department, including 11 California licensed Structural Engineers. We provide structural engineering design and seismic evaluations as well as structural peer review services, facility assessment studies, due diligence studies, seismic retrofits, and feasibility studies.

Our Offices

- Sacramento
- Oakland
- San Jose
- Irvine



DESIGNING A

BETTER FUTURE

CORE VALUES

We see **design** in every opportunity.

We act with **integrity**, respecting others to earn and retain their trust.

We **lead** with humility, bringing expertise and inspiration to each endeavor.

We **make a difference** in our communities, with work that matters and a culture of giving.

We **put people first**, promoting work life balance and professional growth while valuing diverse perspectives.

We will **create a better future** for those who follow.

CARBON CHAMPION: NICOLAS PAULI



ABOUT NICOLAS PAULI

As an Engineer II at Lionakis, Nicolas Pauli brings over 12 years of experience to your project. His experience in the industry allows him to solve problems in a timely and effective manner. Nicolas also takes into consideration all aspects of construction, the phasing of the project and constructability when creating details for a project.

Nicolas will be supporting a small 2050 group with Matt Melcher at the leadership of the firm as well as Kris Li. This group will meet regularly to set the goals for the year and assess our progress.

We engage in all offices as we operate as one studio whether in the same office or remote. All offices are expected to follow the same guidelines for their projects.

Each project is reviewed as part of a design critique where a sustainability (including carbon) discussion is required.



EDUCATION PLAN

During the process of educating our team to achieve Net Zero Carbon structures, there must be knowledge about what embodied carbon is and why it is important to reduce it for the future of the environment.

Lionakis has developed a plan to educate our team and further our understanding and establishment of sustainability goals. We plan to provide engaging presentations to our team and encourage them to attend educational events, such as webinars or conferences.

It is also crucial that we are aware of the different digital resources that can be used to estimate embodied carbon and have full knowledge on what we are and how to use them correctly.

- Presentations and Trainings
- Spreadsheets to post process, calculate and visually see results
- Comparisons to industry standard embodied carbon
- Choosing materials based on embodied carbon
- Leveraging our existing Microsoft Teams collaboration, we added a channel for Sustainability posts about general interest and questions.
- As part of our New Employee Orientation, all employees are introduced to Sustainability posts as one of our Core Values as well as Embodied Carbon.

HOW TO CALCULATE EMBODIED CARBON?

Crucial to understanding the Life Cycle Assessment (LCA) tools that are used to calculate embodied carbon. LCA's provide detailed information on environmental impacts of a building's operation as well as burdens from materials and products.

We plan on using the following programs:

- Tally – the first LCA app that allows you to calculate the environmental impacts of your building material (Autodesk/Revit model)
- EC3 – a tool that allows benchmarking, assessment and reductions in embodied carbon, focused on the upfront supply chain emissions of construction materials. <https://www.buildingtransparency.org/ec3-resources/ec3-docs/>

We design for durability and for the life cycle of the structure (carbon life cycle). Important for our team to understand the relationship between material choices, structural systems, and environmental impact.

REDUCTION STRATEGY

At Lionakis, we will continue to strive for engineering solutions to reduce embodied carbon with our structural designs. With the collective help of the 2050 signatory firms establish reduction goals to achieved zero-carbon by 2050. We will report the findings to determine future goals for the most sustainable designs.

4 life cycle stages for a structure:

- Production stage
- Construction stage
- Use stage
- End-of-life stage

Our firm-wide reduction targets are 10% in the short-term (<1 year) and 20% long-term (>5 years) compared to current Cal Green Baseline. Lionakis operates across various markets and offers a range of different construction materials. This diversity in reported projects will be helpful in setting a benchmark for current practices, as well as future goals, aimed at reducing embodied carbon.



REPORTING PLAN

Each year, Lionakis will commit to lowering embodied carbon in our designs through analysis and engineering solutions through our participation in the SE 2050 Challenge.

- Determine which program to use for tracking embodied carbon.
 - We will use Tally and EC3 and evaluate our options.
- Determine how data will be tracked and analyzed.
- Who will be responsible for tracking individual projects.
 - We have developed a process, teaming with our architects in alignment with the 2030 commitment to track as many of our projects as possible.

To prioritize sustainability, the primary strategy is to explore and implement new, eco-friendly materials and techniques for construction.

- Limits on global warming potential (GWP)
- Material substitutions (lower carbon materials)
- Design efficiently
 - Understanding where re-use is effective.
- Recycled materials

ADVOCACY AND KNOWLEDGE SHARING

Lionakis aims to maintain a schedule for presentations to discuss the embodied carbon action plan. Spreading this information will guide our industry to establish goals, strategies and track progress.

- Provide continuous knowledge to our employees.
- Distribution of market materials.
- Contain active conversations with suppliers and clients for carbon reduction opportunities.
- Integrate low carbon materials to our structural designs.

We, at Lionakis, will advocate for climate action and SE 2050 in several ways:

- Volunteer with industry associations.
- Create and share resourceful information on social media.
- Having a page on our intranet that serves as an area with knowledge.
- Be involved in Building and Material code developments.

Please see below for an example of the resources we currently have available on our intranet in regards to sustainable design.

Welcome to the High Performance Design Community!

This community contains resources and posts that are specific to High Performance Design.

Looking to share something about High Performance Design? Head over to the [projects + practice](#) feed and be sure to tag your post with [#HighPerformanceDesign](#).

Have an update to existing content or an idea for new content? Contact the LEO Sustainability Community Managers listed on the (bottom) right-side menu of this page.

Sustainability Posts



AIA 2030 Project List

Wondering if your project team needs to report data for our 2024 AIA 2030 Commitment goal? Take a look at this project list to confirm project and status.

Kristina Williams - Dec 9



California Energy Design Assistance (CEDA)

Looking for help in energy design as we reach for net zero carbon? CEDA can provide design assistance if your project is located in one of the investor-owned public utilities (SDG&

Steve Kendrick - Aug 13



SEAOC/AIA CalGreen Embodied Carbon Webinar Series #3: Implications of Material Procurement for Design Professionals

Don't miss the third in a series of four free webinars on Wed., April 10 from 12 noon - 1pm. Link to AIA webinar page which includes a link to registration here:

Joyce Fuss - Apr 3

Resources



AIA 2030 Reporting

Lionakis Internal Database



Sustainability Documents

Description here



Sustainability Resources

Description here

WELLness Initiative



WELLness at Lionakis

WELL-Related Resources and Policies

Projects



LEED Projects

Sustainable Integrated Design, LEED, WELL



**WE PLAN TO BECOME
EFFECTIVE ADVOCATES
BY MENTORING AND
ENCOURAGING OUR TEAM
ON SUSTAINABLE BUILDING
DESIGNS AND WHY IT'S
CRUCIAL FOR THE BETTER
OF OUR FUTURE AND
FUTURE GENERATIONS.**



STRUCTURAL ENGINEERING
ARCHITECTURE
INTERIOR DESIGN