



S E 2 0 5 0

EMBODIED CARBON **ACTION PLAN**

2 0 2 5

INTRODUCTION

“We are committed to understanding the needs of our clients and communities and adapting to changing conditions. We believe that doing our part to curb climate change by educating all of our employees and reducing embodied carbon on our projects and industry-wide will enable us to better serve our clients and communities for years to come.”

– Stacy Bartoletti, CEO , Degenkolb Engineers

At our core, Degenkolb’s purpose is to **engineer a better future for our clients and communities**, and we are committed to being part of the climate solution. Since signing onto the SE 2050 Commitment in 2021, we have been actively working to reduce the environmental impacts of our projects by extending structures’ service lives, designing efficient systems, procuring lower-carbon products, and tracking our impacts by conducting embodied carbon assessments.

2024 YEAR IN REVIEW

- ▶ In 2024, Degenkolb committed to **firm-wide education**. We grew company-wide engagement in our Embodied Carbon Interest Group, incorporated embodied carbon in our new hire orientation, and shared countless resources and presentations with the entire company.
- ▶ EnviCASE, our **publicly-available embodied carbon estimation tool**, is being used by all of our offices on a variety of project types.
- ▶ In collaboration with our Mass Timber Working Group, we created a **centralized hub of resources** for our staff related to mass timber, life cycle assessment, and biogenic carbon.
- ▶ We increased our **engagement in external sustainability committees**, and shared our knowledge with design partners.

2025 KEY ACTIONS

- ▶ Expanding **education** and **adoption**
- ▶ Engage **every office** in embodied carbon education
- ▶ Perform **embodied carbon assessments** on all major projects



SE 2050 MISSION STATEMENT

All **structural engineers** shall understand, reduce and ultimately eliminate **embodied carbon** in their projects by 2050.

2024 LESSONS LEARNED

- ▶ **EDUCATION:** Everyone learns in different ways! In 2024, we added more variety to our education initiative to reach more of our employees: live and recorded presentations, longer-form web resources, single-page cheat sheets, example specifications, one-on-one project-specific coaching, and more.
- ▶ **REPORTING:** Temporary carbon sequestration in bio-based materials can be a key factor in the overall impact of a building. As such, we built out the biogenic carbon capabilities of EnviCASE.
- ▶ **REDUCTION:** Now that we have updated our standard specifications to have EPD and other sustainability requirements, we need to verify that those requirements are met. In 2024, we created internal guidelines for reviewing contractor submittals to ensure that our embodied carbon reductions are realized.
- ▶ **ADVOCACY:** Our design partners are very curious about embodied carbon! We gave presentations at several architects' offices and engaged in conversations about how to collaborate on embodied carbon reduction.



PEOPLE

► **Degenkolb's Sustainable Design Committee** manages the firm's involvement in SE 2050 by leading our firm-wide embodied carbon education program, developing our LCA capabilities, updating our specifications and standard design practices, and advocating for embodied carbon reduction.



SEATTLE

Kyle Steuck *Principal*
Benjamin Terry *Designer*
Austin Anderson *Designer*

DETROIT

Michelle Atto *Senior Associate*

SACRAMENTO

Charlie Chi *Senior Engineer*

SAN FRANCISCO

Claire Killian *Design Engineer*
Morgan Michna *Marketing Specialist*
Ray Pugliesi *Senior Principal*
Joseph Rodgers *Design Engineer*
Connor Gilligan *Designer*
Lewis Nolf *Designer*

OAKLAND

Brendin Randall *Design Engineer*
Jennifer Terada *Designer*
Priya Helle *Designer*

ORANGE COUNTY

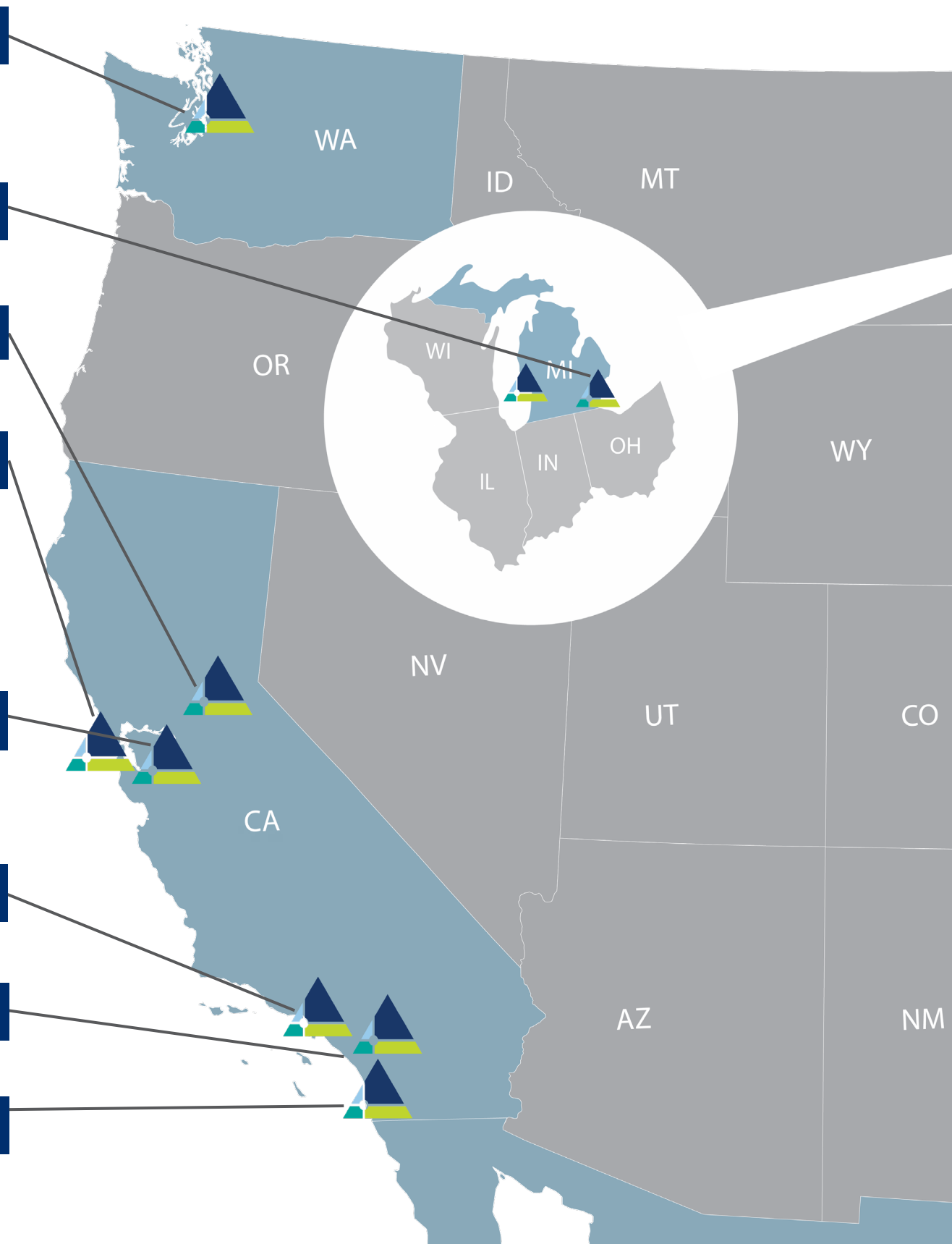
Claudia Zapata-Craft *Design Engineer*

LOS ANGELES

Evelyn Li *Design Engineer*

SAN DIEGO

Candice Hanna *Design Engineer*



EDUCATION

Educating our employees and connecting them with resources is crucial in order to maximize our embodied carbon reduction. We equip every Degenkolb employee with training, presentations, digital resources, and easy access to a local embodied carbon expert to ensure project teams have the tools they need to succeed.

- Last year, we engaged a liaison from each office to act as a point person for embodied carbon questions. Moving forward, we plan to expand the role of these **local embodied carbon experts**.
- We have **increased attendance in our Embodied Carbon Interest Group (ECIG) meetings** and will continue to educate our employees on new and emerging embodied carbon topics. We plan on incorporating games and prizes into some of our presentation formats to increase engagement.
- Degenkolb has expanded our internal resource hub to include information on new regulations related to embodied carbon and review guidance for submittals and specifications.
- Members of our sustainability committee have **presented at new hire orientation meetings** to get our newer employees up to speed on embodied carbon topics. We plan to leverage this again moving forward to provide all employees with a baseline knowledge of embodied carbon.
- We aim to **collaborate with an external presenter** in the AEC industry to host an internal presentation, further growing our knowledge base.



ACTIONS

2024

- ✓ Continued to host and increased engagement in firm-wide Embodied Carbon Interest Group (ECIG)
- ✓ Engaged an embodied carbon expert at every office
- ✓ Expanded our internal resource hub

2025

- ▶ Leverage office embodied carbon experts to increase carbon accounting knowledge across offices
- ▶ Expand onboarding education
- ▶ Host an external presenter to discuss embodied carbon

BEYOND

- ★ Provide every Degenkolber with baseline knowledge and access to resources for embodied carbon reduction on every project
- ★ Engage in industry sustainability committees in all of our geographic regions



► “It is amazing to see the **strides that have been made both at Degenkolb and across the industry** regarding embodied carbon education. I’m very proud of our team for the recognition we’ve received and am looking forward to expanding this education even further!”

- RYAN WHITE, EDUCATION LEAD

REPORTING

Degenkolb understands the **importance of quantifying the embodied carbon in our designs**. As we continue to collect data related to buildings' embodied carbon, Degenkolb is focused on better understanding, in both a new-design and retrofit setting, the leading contributors to these emissions. By refining our understanding, we can set targeted, proactive goals focused on reducing our environmental impact.

- Degenkolb is a growing company with offices and projects of all different sizes. This year, we aim to **perform embodied carbon assessments on all major new design and retrofit projects**, and submit at least two per US office to the SE 2050 database.
- In early 2024, Degenkolb released our **internal embodied carbon calculator (EnviCASE)** to the public for free to support SE 2050's shared goal of carbon neutral projects. Degenkolb will continue advertising the benefits of the tool with the hope of engaging other structural engineering firms.
- A large portion of Degenkolb's work is in the retrofit space. We are continuing to **study how different retrofit schemes affect a building's environmental impact** over the remaining life of the structure.
- Degenkolb is actively developing case studies to compare the embodied carbon impact of projects with similar design requirements designed by offices across the firm.

ACTIONS

- ✓ Submitted 2+ projects per US office to the SE 2050 database
- ✓ Grew internal database for quantifying company's carbon impact
- ▶ Develop submittal guidelines for embodied carbon calculation
- ▶ Publish internal case studies comparing embodied carbon impact of similar buildings
- ▶ Publicize EnviCASE to engage more firms in the SE 2050 commitment
- ★ Perform LCAs for all relevant Degenkolb projects
- ★ Use database to set EC targets on each project
- ★ Advise clients on potential EC savings for different structural schemes or retrofits

2024

2025

BEYOND

DEGENKOLB IS ACTIVELY USING OUR IN-HOUSE EMBODIED CARBON ESTIMATION TOOL (ENVICASE) TO ASSESS THE CARBON IMPACT OF NEW DESIGN HOSPITALS THROUGHOUT THE WEST COAST TO DETERMINE IMPACT OF DIFFERENT BUILDING CHARACTERISTICS ON OVERALL GLOBAL WARMING POTENTIAL.



- This year, Degenkolb leveraged EnviCASE to assess the carbon benefit of a **retrofit scheme vs. replacement** during the schematic design phase of a school project.
- This study helped **answer the question at the heart of carbon reduction strategies**: To what extent does building reuse mean less global warming potential than new design?
- The results of this comparison will be publicized in a **2025 case study**.



ENVICASE WORKFLOW



Carbon Factors



Model Integration



Carbon Visualization



Project Comparison

CARBON REDUCTION POTENTIAL



Design

Construction

Operation and Maintenance

PROJECT DEVELOPMENT STAGES

Figure 4: Opportunities to reduce embodied carbon from stage of design process. Source: HM Treasury: Infrastructure Carbon Review, 2013

REDUCTION

Degenkolb is committed to reducing embodied carbon in the built environment.

Through expanding our carbon accounting tool abilities and reach, improving our standard workflow, drawing, and specification templates, and working closely with staff at all levels, Degenkolb is reducing the carbon footprint in projects.

- This year, Degenkolb continued to **refine and expand material sustainability internal resources** in specifications and General Notes. These changes have resulted in increased submission of EPDs from suppliers, and project-specific EPDs generated for concrete mixes.
- Degenkolb developed **enhanced submittal review guidelines** for concrete, shotcrete, steel, reinforcing, and masonry developed to allow easy use of reductions strategies and to negotiate conversations both internally and with clients.
- Degenkolb **expanded EnviCase** to incorporate biogenic carbon. With the creation of an internal Mass Timber Working Group, wood sustainability requirements are being explored.
- Degenkolb began to **explore various carbon accounting case studies** in 2024, including retrofit vs. replacement, projects incorporating circular economy principals, and hospital embodied carbon database. In 2025, these case studies will be expanded.

ACTIONS

- ✓ Developed case study for retrofit vs. repair that was presented internally
- ✓ Expanded internal resources for specifications, submittal review, and federal, state, and local jurisdictions
- ✓ Developed internal tools for sustainable submittal review for embodied carbon accounting
- ✓ Gathered mass timber resources for incorporation into sustainable language and goals
- ▶ Investigate circular economy used in Degenkolb projects and develop case studies
- ▶ Publicly release retrofit vs replacement case study
- ▶ Establish and implement internal carbon reduction goals.
- ★ Incorporate LCA into standard project practice. Incorporate sustainability benchmarks and goals on every project
- ★ Incorporate circular economy practices into standard design process
- ★ Quantify carbon intensity of renovation and retrofit vs. replacement

2024

2025

BEYOND



DEGENKOLB TEAM MEMBERS ATTEND THE TOPPING OUT CEREMONY FOR THE UCI HEALTH — IRVINE MEDICAL CAMPUS, WHICH WILL OPEN AS THE NATION'S 1ST ALL-ELECTRIC, ZERO-EMISSION HOSPITAL.



ADVOCACY

KNOWLEDGE SHARING

Achieving net zero buildings by 2050 will not only take our entire industry, but everyone advocating for better practices and regulations. Degenkolb's fantastic clients, storied history, and broad expertise empower us to elevate the industry. We have given external presentations, created internal resources, promoted sustainability on social media, and participated in industry organizations. This year we will advance advocacy efforts in several ways.

- Conventionally, each design specialization works independently. But a collaborative approach is necessary. We **engage with clients** on early-stage, high-level discussions, give knowledge sharing presentations to partner firms and at conferences, and empower informed decisions with cutting-edge analysis and visualization.
- Degenkolb participates in SEI and SEAONC sustainability committees to advocate within our industry. This year, we are getting more involved in **broader AEC-industry organizations** including CLF, USGBC, Woodworks, and AIA. We hope to see you there!
- Additionally, we **engage in our community** through organizations such as Engineers Alliance for the Arts and the ACE Mentor Program of America.
- We **advocate to policy makers** by following legislation and participating in calls for comments.
- This year, we are **updating our website** Degenkolb.com. This completely overhauled website, expected mid-2025, will include deep discussions of our sustainability ideology and efforts.

ACTIONS

- ✓ Developed internal resources
- ✓ Promoted sustainability efforts on social media
- ✓ Presented Embodied Carbon Reduction at peer firms
- ✓ Active in SEI and SEAONC
- ▶ Participate in AEC-industry groups
- ▶ Apply tools for project managers on more projects
- ▶ Knowledge share with more peers
- ▶ Continue community outreach
- ▶ Launch updated website
- ★ Advocate for EC reduction on projects with clients and in our communities
- ★ Continuously improve our PM Sustainability Toolbox
- ★ Contribute to the wider body of knowledge about EC
- ★ Work with government bodies and policy makers

2024

2025

BEYOND



WE HAVE AUTHORED THE AIA-ACCREDITED COURSE EMBODIED CARBON REDUCTION AND PRESENTED IT AT SEVERAL ARCHITECTURE OFFICES. WE WOULD BE HONORED TO PRESENT TO YOUR FIRM! SEE THE PAGE BELOW AND CONTACT SUSTAINABILITY@DEGENKOLB.COM TO SCHEDULE A PRESENTATION IN-PERSON OR VIRTUALLY.

