A blue L-shaped graphic element positioned to the left of the title text.

# 2025 EMBODIED CARBON ACTION PLAN

A photograph of the UCSD Center for Novel Therapeutic building at dusk. The building features a modern design with large glass windows and a facade of horizontal metal slats. A paved walkway leads through a landscaped area with low-lying plants and modern light fixtures towards the building.

*UCSD Center for Novel Therapeutic*  
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# 1 | INTRODUCTION

## EXECUTIVE SUMMARY

The year 2024 was best characterized by the theme of change. From the major changes, like our country's president, to the small changes that many of us make every day to move to a more sustainable future. Coffman Engineers is part of that change toward stewardship of both our natural environment and the built environment we design. We proudly engineer solutions in concert with owners, clients and consultants, with a goal of continued improvement, year over year. This change is readily seen in our year four steps in the approach to achieving the goal of the SE2050 commitment and to ultimately designing net-zero embodied carbon structures by 2050.

The approach to Education, Reporting, Reduction, and Advocacy we aim to achieve in this fourth year of the SE2050 Building Challenge is outlined in the following pages. Our Sustainable Design Production Group oversees the implementation of our goals and is a guiding force to educate our staff on the structural engineer's role in sustainable design. Quarterly presentations continue to anchor the education of our engineers and we expanded the group of engineers familiar with reporting by reaching our goal of 10 projects posted to the SE2050 database. In the Reduction area, we were also excited to work with our fellow design team members on multiple Higher Education projects aiming for various levels of LEED certifications. Our Advocacy for carbon reducing strategies, particularly for the use of Type 1L cement in our concrete projects, lead to use of the material in a number of our buildings, reducing embodied carbon of the concrete by 10% over traditional concrete buildings of the exact same design.

As we move forward in 2025, We will extend our LCA Analysis process to multiple Coffman structural departments, training structural engineers across our offices to help us reach a goal of twenty (20) buildings submitted to the SE2050 database.

We invite you to continue with us on this journey that aims to grow into a vibrant structural design philosophy of sustainability, that becomes as inherent to the choices we make for materials, systems, resilience, and safety of the buildings we are honored to design. Change is happening in the right direction.

James R. Conley, SE, Embodied Carbon Reduction Champion, Coffman Engineers, Inc.

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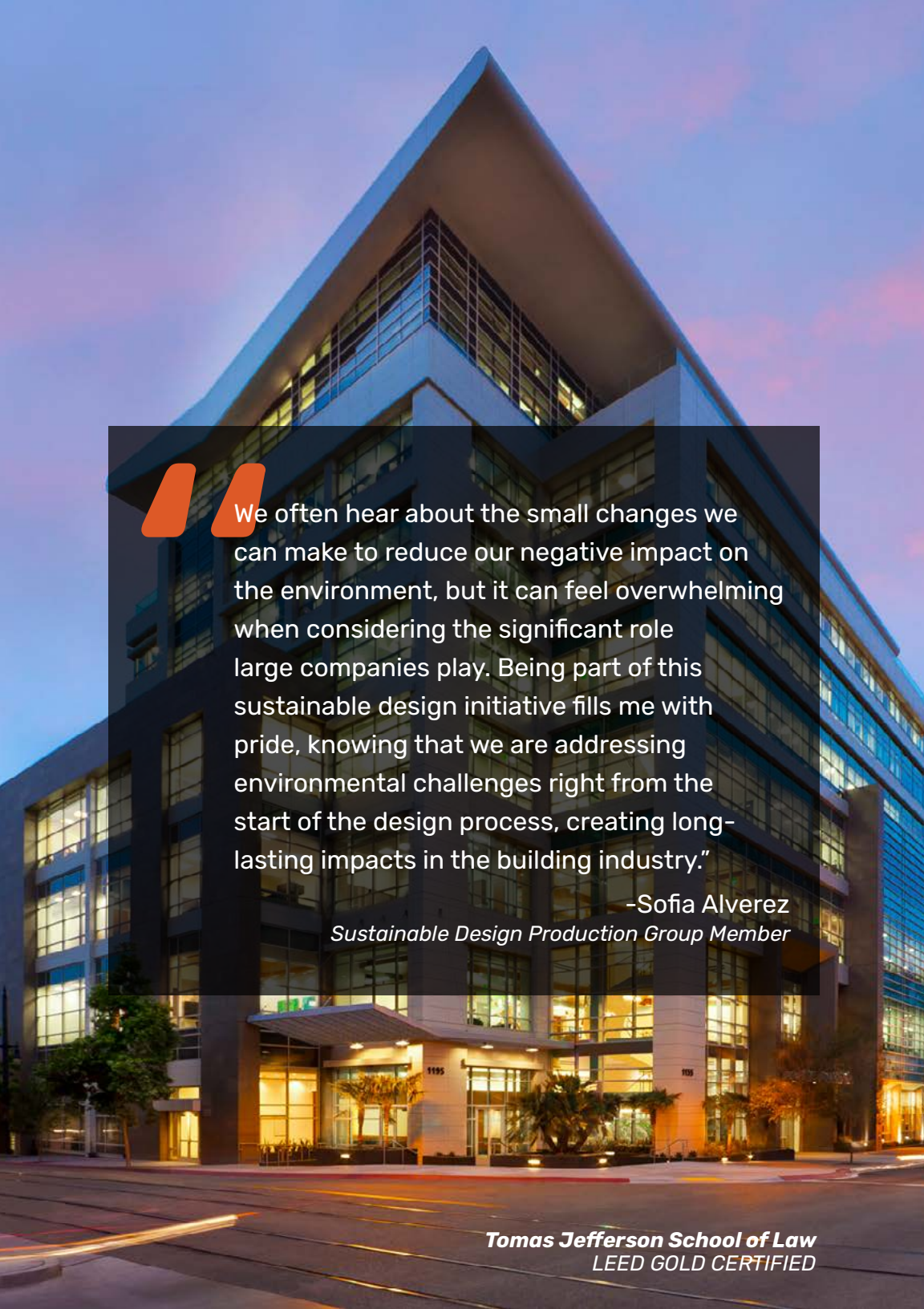
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[www.coffman.com](http://www.coffman.com)





"We often hear about the small changes we can make to reduce our negative impact on the environment, but it can feel overwhelming when considering the significant role large companies play. Being part of this sustainable design initiative fills me with pride, knowing that we are addressing environmental challenges right from the start of the design process, creating long-lasting impacts in the building industry."

-Sofia Alvarez  
*Sustainable Design Production Group Member*

**Tomas Jefferson School of Law**  
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## 2 | EDUCATION (OUR EXPERTS)

Sustainability has always been important to our Coffman team. Starting with our San Diego office in 2021, we have been working diligently to develop a plan to help us achieve a more sustainable built environment. This culminated with the formation of our own internal Sustainable Design Production Group and our commitment to SE2050 in 2021. Since then, this dedicated group of engineers and technicians has continued to develop, organize, and implement the tools and best practices required for our team to achieve net-zero structural systems.

Major highlights of the past year on the Education front included hosting a presentation for our local structural engineers association. It was a 'watch party' of a joint AIA/SEAOC presentation series on the new CalGreen Embodied Carbon supplement. The presentation was a targeted summary of the primary key elements of the three presentations, consolidated into an approximately one hour long re-watch for members benefits. Presentations on masonry by a San Diego local CMU block manufacturer, RCP Block and Brick, also help round out our education.

For 2025, one of our education goals is to bring our ECAP presentation to all of our structural departments across the company. This will further advancement in educating our structural peers on the commitments and practices of Coffman toward structural sustainability.

### EMBODIED CARBON REDUCTION CHAMPION



#### James "Jim" Conley, SE, DBIA

Jim Conley is a Senior Discipline Manager in our San Diego office and has extensive knowledge and experience with structural engineering design. He enthusiastically took on the role of Embodied Carbon Reduction Champion for Coffman and is our structural lead on sustainability design. His involvement in organizations such as the Structural Engineers Association of San Diego and the Post-Tensioning Institute, coupled with his passion for sustainability, make him a strong advocate and leader of SE2050. Jim will serve as the main advocate of implementing practices to reach SE2050 goals across Coffman's structural engineering departments companywide.

### STRUCTURAL ENGINEERING PRINCIPAL



#### Casey Whitsett, SE

Casey Whitsett is a Structural Engineering Principal in our San Diego office. As a past president and current member of the Board of Directors of the Structural Engineers Association of San Diego, Casey's leadership and involvement in the structural engineering community gives him multiple outlets to spread the word about SE2050 and teach sustainable design practices to younger engineers.



## 2 | EDUCATION (OUR STRATEGY)

Achieving net-zero structural systems begins by educating our team on current carbon reduction strategies and resources and continuing to seek opportunities to learn in the future. We have developed a plan for **teaching** and **empowering** our staff which includes:

- ▶ In-House Presentations from Subject Matter Experts on Material-Specific Carbon Reduction Strategies
- ▶ Distributing Regular Email Updates to Highlight Carbon Reducing Strategies
- ▶ Making LCA Tools, Documents, and Presentations Available on Internal Company Networks
- ▶ Maintaining an SE2050 Onboarding Procedure for New Hires

In addition to our Embodied Carbon Reduction Champion, we will empower our employees to take leadership in this initiative by organizing a Sustainable Design Production Group who will:

- ▶ Prioritize and Implement our SE2050 Goals
- ▶ Review and Share Tools and Other Educational Content
- ▶ Continue to Present SE2050 to Other Coffman Structural Departments Leadership
- ▶ Continue to Present Work to Establish Sustainable Design Production Groups in Our Larger Coffman Structural Department



### Q1 2025

- ▶ Continue to train Coffman structural departments across the company on the LCA Analysis procedure.

### Q2 2025

- ▶ ISSUE 2025 ECAP

### Q3 2025

- ▶ TRAIN 5 OR MORE OTHER COFFMAN STRUCTURAL DEPARTMENTS ON THE LCA ANALYSIS PROCESS

### Q4 2025

- ▶ UPLOAD PROJECT LCA DATA TO SE2050 DATABASE

COFFMAN REPRESENTATIVE ATTENDS QUARTERLY EXTERNAL EDUCATION PROGRAMS

PERIODIC EMAIL DISTRIBUTIONS TO STAFF SHARING THE TOP 10 CARBON REDUCING ACTIONS FOR STRUCTURAL ENGINEERS

- ▶ CONTINUE TO INCORPORATE SE2050 ONBOARDING PROCEDURE FOR NEW HIRES

- ▶ WATCH A PRESENTATION BY SEAOSD SUSTAINABLE DESIGN COMMITTEE FULL STRUCTURE RE-USE OF A STEEL BUILDING IN BOULDER, CO.

- ▶ COMPLETE INTENDED LCA PROJECT ASSESSMENTS

- ▶ REVIEW 2024 ACCOMPLISHMENTS AND ESTABLISH 2025 GOALS



### 3 | REPORTING

#### MEASURE

Our committee was proud to meet our goal of measuring and posting 10 buildings to the SE2050 database. The results captured a wide range in building use, materials and sizes. The table below shows the project names, square footage, brief description, LCA software used, GWP and GWP Intensity. We will continue to track & collect data to help our teams identify where we can have the biggest impact in implementing strategies to make reductions & meet our 2050 goal of Net Zero carbon structures.

#### EDUCATE

Education is the foundation for meeting the goals set out in SE2050. Coffman will provide quarterly training sessions with our engineers focused on identifying embodied carbon in design, tracking its prevalence in our structures, and discussing techniques for reduction.

#### PLAN

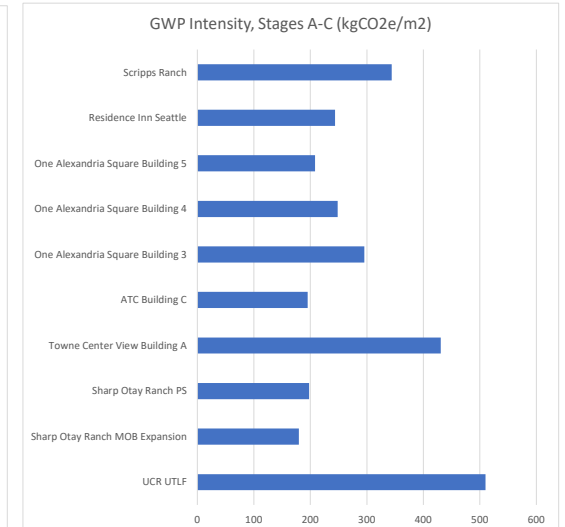
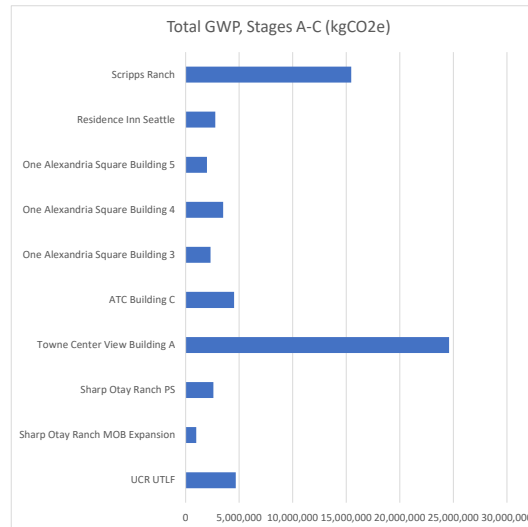
Coffman is actively engaging with architects and owners on establishing project sustainability goals beginning at project initiation and implementing them through the life of the project.

#### TRACK

By the end of 2025, Coffman will submit 20 LCA tracked projects, doubling our goal from last year, and have minimum of 5 offices participate in the SE2050 database uploads.

Project	Description	Gross Square Footage (ft2)	LCA Tool	Total GWP, Stages A-C (kgCO2e)	GWP Intensity, Stages A-C (kgCO2e/m2)
UCR UTLF	4-story mild reinforced concrete building with shear walls, steel moment frames, and conventional foundations.	98,811	Tally	4,681,210	510
Sharp Otay Ranch MOB Expansion	2-story steel building with steel moment frames, and conventional foundations.	58,725	Tally	980,501	180
Sharp Otay Ranch PS	5-story PT concrete building with moment frames, and conventional foundations.	140,369	Tally	2,581,894	198
Towne Center View Building A	6-story mild reinforced concrete building with shear walls, 6-story subterranean and conventional foundations.	614,522	Tally	24,591,540	431
ATC Building C	6-story steel building with steel moment frames and CMU basement shear walls, and conventional foundations.	249,321	Tally	4,526,203	195
One Alexandria Square Building 3	3-story steel building with 1 level basement, steel moment frames, and conventional foundations.	84,396	Tally	2,316,615	295
One Alexandria Square Building 4	2-story steel building with 1 level basement, steel moment frames, and conventional foundations.	151,303	Tally	3,491,756	248
One Alexandria Square Building 5	3-story steel building with steel moment frames, and conventional foundations.	102,401	Tally	1,982,392	208
Residence Inn Seattle	6-story steel and metal stud building with concrete core walls, and half mat slab and half conventional foundations.	122,300	Tally	2,769,569	244
Scripps Ranch	4-story mild reinforced concrete building with core walls, 4-story subterranean and conventional foundations.	483,423	Tally	15,451,610	344

Average Intensity 285





# 4 | REDUCTION

A major achievement of our 2024 year was implementation of maximum embodied carbon thresholds into our structural notes for all California new design projects exceeding 100,000 sf, or DSA projects exceeding 50,000 sf, in accordance with new CalGreen Code requirements. A table of the maximum GLOBAL WARMING POTENTIAL (GWP) LIMIT values for various construction materials is shown below. Incorporating these limits into the structural notes and specifications helps increase demand for sustainable products, ultimately leading to reduced global warming impacts.

## CONCRETE

DESCRIPTION	KG CO2 EQ/M <sup>3</sup>
CAPS AT DRIVEN DEEP FOUNDATIONS	566
CAST IN PLACE DEEP FOUNDATIONS	566
SHALLOW FOUNDATIONS	566
SLAB ON GRADE	566
GRAVITY COLUMNS	661
MOMENT FRAME COLUMNS AND BEAMS	661
ELEVATED SLABS AND BEAMS	661
WALLS	661
TILT-UP WALL PANELS	566
TOPPING ON PRECAST	566
LIGHT WEIGHT FILL ON COLD-FORMED STEEL DECK	1039
NORMAL WEIGHT FILL ON COLD-FORMED STEEL DECK	566
SHOTCRETE	566
OTHER CONCRETE	566

## REBAR & STEEL

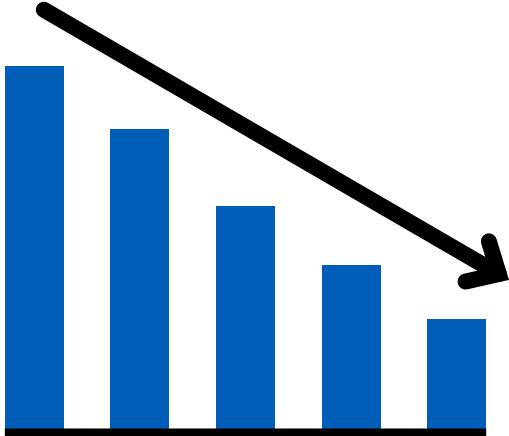
DESCRIPTION	MT CO2 EQ/MT
REBAR	1.56
WF AND WT SHAPES	1.77
OTHER ROLLED SHAPES	1.77
RECTANGULAR HSS SECTIONS IN FRAMES	3.00
OTHER RECTANGULAR HSS SECTIONS	3.00
ROUND HSS SECTIONS	3.00
STRUCTURAL PIPE SECTIONS	3.00
PLATES IN FRAMES	2.61



# 4 | REDUCTION

Over the 3 years of our involvement in SE2050, though our sample size is small, we are proud to already be seeing a reducing in the average GWP Intensity of our projects. Things are changing in the right direction!

YEAR	# OF PROJECTS	AVERAGE INTENSITY (KGC02E/M2)
2022	1	335.5
2023	6	320
2024	10	285



FOR OUR FOURTH YEAR COMMITTING TO SE2050, COFFMAN WILL FOCUS PRIMARILY ON DATA GATHERING + CALGREEN REQUIREMENTS\* OF EMBODIED CARBON IN EXISTING AND NEW PROJECTS.

*\*for our California offices*

- ▶ By the end of 2025, we will identify and implement our revised **project specific embodied carbon reduction plan**, collaborating with the design and construction teams to set achievable targets.
- ▶ By the end of 2025, we will leverage our **embodied carbon comparison study** to assess the impacts and efficiencies of different materials and share these results with our clients and staff.
- ▶ **Implement CalGreen GWP** maximum requirements in California projects.
- ▶ Our staff will continue to work with concrete suppliers to identify and implement **reduced embodied carbon mix designs** which meet the project design and sustainability goals.
- ▶ Coffman will continue to **incorporate biogenic materials** in our structural designs and seek opportunities to incorporate new or alternative biogenic materials into our designs.
- ▶ We will advocate for the **use of domestic steel** for its high recycled content and reduced shipping.



## 5 | ADVOCACY

Advocating for SE2050 will be a multi-targeted goal, focusing on educating clients, contractors, owners, and our structural peers. We will continue to prepare presentations for our colleagues highlighting SE2050, the steps we are taking internally, and other key information which they can use to achieve more sustainable structures. We will use these opportunities to identify how best to collaborate to achieve these goals and share our collective knowledge to make meaningful carbon reductions.

AT COFFMAN, WE ARE PROUD AND EXCITED TO BE COMMITTED TO THE SE2050 CARBON NEUTRAL PROGRAM. WE WILL CONTINUE TO SPREAD THE WORD TO OUR COMMUNITY BY:

ACTIVELY ENGAGING CLIENTS AND OWNERS TO INCORPORATE STRUCTURAL MATERIALS WITH ENVIRONMENTAL PRODUCT DECLARATIONS (EPDS) IN THE DESIGN PROCESS.

INCORPORATING OUR SE2050 COMMITMENT INTO OUR STANDARD PROPOSAL LANGUAGE.

COMMUNICATING OUR SE2050 COMMITMENT AND DETAILS ABOUT THE PROGRAM ON OUR WEBSITE AND SOCIAL MEDIA.

Check out our SE2050 Commitment Announcement!  
[www.coffman.com/news/coffman-commits-to-se-2050](http://www.coffman.com/news/coffman-commits-to-se-2050)



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