



SE 2050 Embodied Carbon Action Plan 2025

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INTRODUCTION

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LETTER OF COMMITMENT TO THE SE 2050 PROGRAM

November 22, 2023

Laura Champion
Director
Structural Engineering Institute

Dear Laura,

Rutherford + Chekene (R+C), a 55-person firm located in San Francisco, is hereby signing on to the SE 2050 Commitment Program. We support the vision that all structural engineers shall understand, reduce, and ultimately eliminate embodied carbon in their projects by 2050.

R+C has been in business since 1960. Our legacy of designing facilities that contribute to the betterment of society becomes even more meaningful through our commitment to sustainability. We therefore commit Rutherford + Chekene to take the following steps which are part of the SE 2050 Commitment Program:

- Within six months and annually henceforth, we commit to reporting an Embodied Carbon Action Plan (ECAP) and permit the ECAP document or form be made public on the SE 2050 website.
- Within one year and annually henceforth, we commit to submit data to the SE 2050 project database in a collaborative effort to understand embodied carbon in structural engineering projects and to set attainable targets for future projects.

We look forward to joining this coalition and industry effort to achieve the goals of the SE 2050 program.

Sincerely,



David Bleiman, CEO
Rutherford + Chekene

INTERNAL ANNOUNCEMENT

An internal announcement was sent to Rutherford + Chekene employees notifying them of the firm's decision to join the SE 2050 commitment.

EXECUTIVE SUMMARY

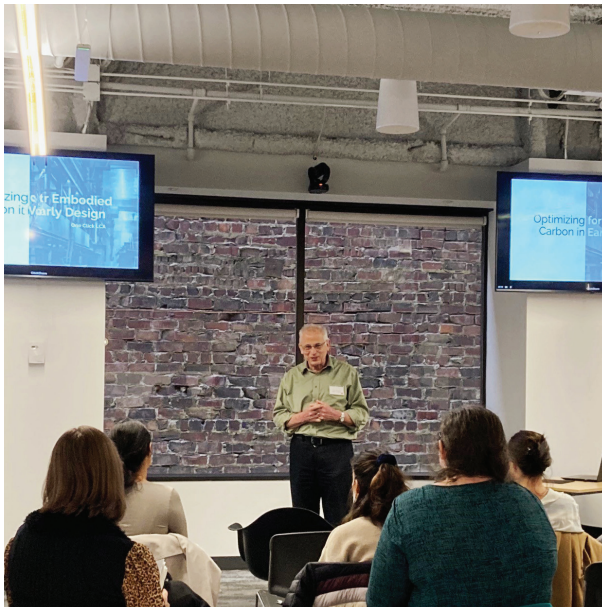
Our focus on carbon reduction is rooted in a desire to build a better future for all.

R+C's commitment to the SE2050 program reflects our dedication to reducing carbon emissions and promoting sustainability within the structural engineering industry. Through these efforts, we not only enhance our own practices but also encourage the broader structural engineering and architectural community to prioritize carbon reduction.



EDUCATION

R+C is dedicated to educating our internal team and external trade partners about the benefits of carbon reduction.



R+C CEO, David Bleiman, presents to R+C staff and industry peers on the importance of embodied carbon reduction and R+C's partnership with OneClick LCA.

R+C EMBODIED CARBON INTEREST GROUP

Erin Maulhardt serves as R+C's Embodied Carbon Reduction Champion, leading a dedicated team that actively engages employees in conducting **Life Cycle Assessments (LCAs)** across various projects. This initiative empowers project managers to make informed decisions by considering the environmental impacts of material choices. Alongside our champions, R+C is proud to have 50+ employees committed to advancing sustainable practices and continually exploring innovative solutions in every aspect of our work.



Erin Maulhardt, SE
Embodied Carbon Reduction Champion



David Bleiman, SE



Kwasi Bempong, EIT

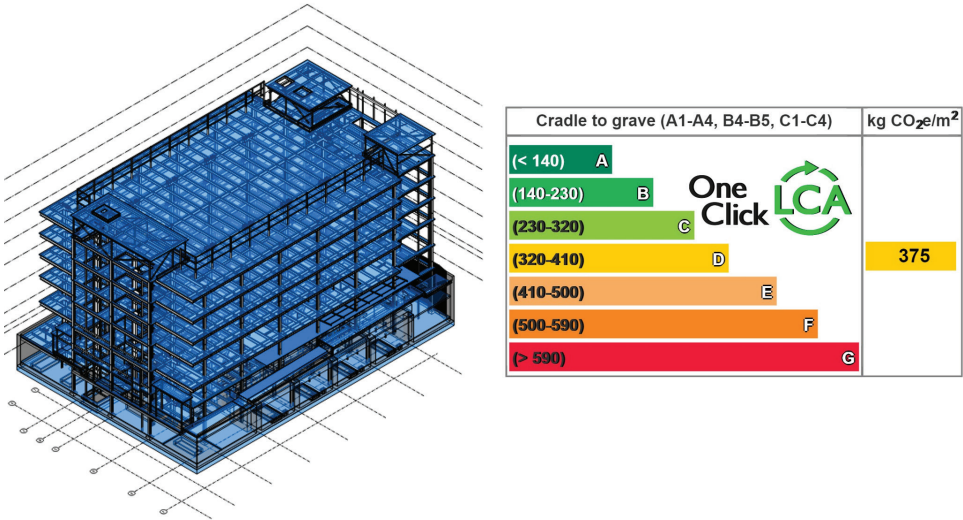
EDUCATION PLAN

Educating our staff at all levels about the importance of embodied carbon reduction—as well as about strategies for achieving this goal—is a critical component of our commitment. Members of our Embodied Carbon Interest Group have attended numerous relevant industry events and are engaging with relevant local industry groups, such as the CLF Regional Hub. They are gathering resources to share with staff and are planning a series of Lunch & Learns for staff on topics related to sustainability and embodied carbon reduction—such as presentations on more sustainable material alternatives. In addition, we have partnered with One Click LCA, and together we have presented to staff about embodied carbon and life cycle analysis.

R+C is dedicated to monitoring and evaluating embodied carbon throughout the entire design process.

REPORTING PLAN

R+C conducts Life Cycle Assessments (LCAs) on projects as they progress through the permitting process. By linking Revit to One Click LCA, R+C accurately determines the quantities of materials used in each project. Initially, generic Environmental Product Declarations (EPDs) are utilized to estimate the building's embodied carbon. As fabricators procure materials, these EPDs are refined to more accurately reflect the specific sources, ensuring a precise calculation of the project's carbon footprint.



This year, we have submitted two projects to the SE 2050 Database: SFO Harvey Milk Terminal 1 Boarding Area B (SFO B/AB) and UCSF Health Bayfront Medical Center. Each project represents a significant achievement in terms of sustainability. The UCSF Health Bayfront Medical Center was able to achieve a 36 percent reduction in embodied carbon compared to the baseline, and SFO B/AB is the world's first LEED Platinum v4-certified terminal. More details on these projects can be found on page 11.

REDUCTION

Working alongside our industry partners enables us to effectively evolve and execute our carbon reduction strategies.

REDUCTION STRATEGY

R+C's short-term carbon reduction strategy involves updating our use specifications to require the submission of Environmental Product Declarations (EPDs). This requirement applies to materials such as Cross-Laminated Timber (CLT), concrete mixes, steel decking, reinforcement, and steel members. Future phases in our strategy will investigate ways in which we can incorporate embodied carbon limits into specifications, further promoting sustainable practices and reducing the carbon footprint of our projects.

Our team is also prioritizing developing and implementing workflows that integrate embodied carbon considerations into early design decisions.



R+C is committed to carbon reduction advocacy through unique partnerships and ongoing education.

KNOWLEDGE SHARING NARRATIVE

Sharing our commitment and efforts related to the SE 2050 initiative is a key way we can educate our clients and industry partners on the importance of embodied carbon reduction as well as approaches to achieve this goal. In addition to announcing our participation in SE 2050 on R+C's website and LinkedIn page, R+C hosts presentations at our San Francisco office, bringing together like-minded owners, contractors, and architects leading the charge in the future of sustainability, specifically through knowledge-sharing sessions on Life Cycle Assessments (LCAs) with our partners, One-Click LCA. Promoting our involvement with the SE 2050 initiative is another important component of these presentations, showcasing our unwavering commitment to carbon reduction.

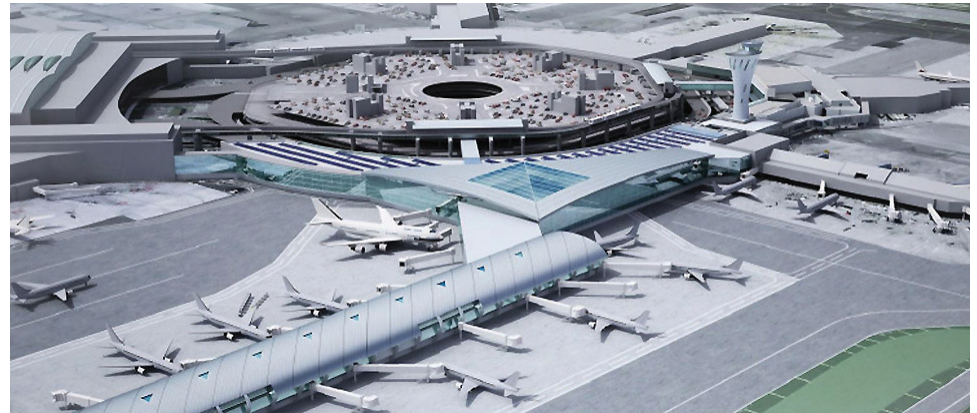


We partner with top-tier material suppliers to secure Environmental Product Declarations (EPDs) for all materials used in our projects. Many of our suppliers already include EPDs as a standard in their submittals, but for those who don't, we underscore the critical importance of providing these declarations.

We're excited to announce a groundbreaking collaboration with a leading Cross-Laminated Timber (CLT) supplier, where we are developing a comprehensive comparison of CLT products versus traditional materials. This initiative not only highlights our dedication to innovation and sustainability but also sets a new benchmark for the industry.

CASE STUDY

SFO Harvey Milk Terminal 1 Boarding Area B



With the smart application of sustainable building practices and materials, this airport facility earned its designation as the world's first certified LEED BD+C New Construction Platinum v4.0/4.1 terminal in 2022.

With design beginning in 2015 and construction of the first phase completed in 2019, SFO's Boarding Area B is among the first, if not THE first, project in the San Francisco Bay Area to introduce and successfully deliver on global warming potential limits in the concrete specifications.

Due to careful tuning of each mix through collaboration between the supplier Central Concrete Supply Company, Webcor Concrete Builders, structural engineer Rutherford + Chekene, and sustainability consultant Arup, the project achieved close to 30% embodied carbon reduction of 8.5M kgCO₂e in the concrete, compared to the US national benchmarks first published by NRMCA.

The project ultimately attained three (3) LEED points for building lifecycle impact reduction plus two (2) points for forty (40) environmental product declarations (EPDs), of which a quarter came from Central Concrete Supply Company's product-specific concrete EPDs, within LEED BD+Cv4.0/4.1 for New Construction certification program.

A few years later, the method of setting Global Warming Potential (GWP) limits in specifications to achieve embodied carbon reduction on Boarding Area B became an important project precedent for stakeholder acceptance of the GWP limit methodology that formed the backbone of the Marin County Low Carbon Concrete Code.

CASE STUDY

UCSF Health Bayfront Medical Center



The new 182,800 sf clinical building features 14 state-of-the-art operating rooms, adult primary and secondary multi-specialty clinics, outpatient rehabilitation therapy spaces, a pharmacy, and office and administrative support areas.

From the outset, R+C collaborated with Stantec to conduct a comprehensive embodied carbon analysis as part of a whole building life-cycle assessment. This proactive approach not only supported the LEED requirements but also delivered impressive sustainability results. Based on our calculations, the design was able to achieve a 36 percent reduction in embodied carbon compared to the baseline.