

A low-angle, upward-looking photograph of several modern skyscrapers with glass facades, reaching towards a clear blue sky. The perspective creates a sense of height and architectural scale. The buildings are arranged in a way that they seem to converge towards the top of the frame.

Jacobs

Challenging today.
Reinventing tomorrow.

SE 2050
**Embodied Carbon
Action Plan**

Table of Contents

Introduction	4
Education Plan & Knowledge Sharing Plan	6
Reduction Strategy	9
Reporting Plan	10
Elective Documentation	12

01

Introduction



Introduction

With approximately \$12 billion in annual revenue and a talent force of approximately 42,000, Jacobs provides a full spectrum of professional services including consulting, technical, scientific and project delivery for the government and private sectors.

As a purpose-led company, we know that Jacobs has a pivotal role to play in addressing the climate challenge. We consider it not only good business, but our duty to channel our expansive capabilities in resilient infrastructure, clean water, decarbonization, the energy transition, social value and beyond, toward benefitting people and the planet.

We employ over 2,100 structural engineers and designers and we are committed to making a positive impact within this critical area of practice.

At Jacobs we have implemented an approach to sustainable business, PlanBeyond 2.0, to integrate sustainability into our business model and company strategy. Also, we have elevated climate response as one of three core accelerators in company strategy.

We have also set ambitious climate commitments in our Climate Action Plan, including ensuring every project becomes a climate response opportunity, achieving net zero greenhouse gas emissions across the value chain by 2040, and maintaining carbon neutral status and 100% low-carbon electricity for our operations (which we achieved in 2020).

The SE 2050 Commitment Program compliments these ambitions and will help us to further prioritize embodied carbon reductions in the design and construction of structural systems both at Jacobs, and in the broader structural engineering profession.

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LETTER OF COMMITMENT TO THE SE 2050 PROGRAM

DATE: October 11, 2023

TO: Laura Champion, Director, Structural Engineering Institute

SUBJECT: Letter of Commitment to the SE 2050 Program

Dear Laura,

Jacobs is writing to sign up 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.

With approximately \$15 billion in annual revenue and a talent force of more than 60,000, Jacobs provides a full spectrum of professional services including consulting, technical, scientific and project delivery for the government and private sector.

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We therefore commit Jacobs 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.

Yours sincerely,



Jan Walstrom
Senior Vice President, Office of Global Climate
Response and ESG
Jacobs



Charles Funk
Global Director Architecture and Engineering
Solutions
Jacobs

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02

Education Plan & Knowledge Sharing Plan

Education Plan

Jacobs is committed to positioning embodied carbon education at the forefront of our internal structural engineering training landscape. Our Structural Engineering Community of Practice (CoP) has over 1,500 members, who are regularly receiving information related to embodied carbon. In 2024, we began distributing a monthly newsletter that will be the primary method of sharing embodied carbon resources as well as internal lessons learned. These internal lessons learned will be presented in the form of case studies that highlight Jacobs projects, and the structural design decisions that reduced embodied carbon. Shining a light on the structural sustainability efforts being done in Jacobs projects will not only serve to educate our engineers on contemporary techniques to reduce embodied carbon but also act as a catalyst to normalize the inclusion of embodied carbon reduction strategies in our structural designs. Furthermore, Jacobs is intent on providing at least (2) live webinars per year focused on embodied carbon to our Structural Engineering CoP that will be available on our e3 Learning platform.

Knowledge Sharing Plan

The purpose of our knowledge-sharing initiative is to communicate Jacobs' efforts, successes, and lessons learned in reducing embodied carbon with our clients, other firms, and the public. To collaborate with fellow structural engineers at other firms, our focus will be on sharing our sustainability lessons learned through official SE 2050 case studies. Furthermore, Jacobs plans to develop presentations to share externally with target audiences ranging from local structural engineering association chapters to national conventions. These platforms will allow us to engage with industry peers, share our experiences, and learn from others in the field. Participation in industry conferences and panels is also essential. Presenting our work and engaging in discussions about leading practices and future trends in embodied carbon reduction will allow us to contribute to the broader conversation on sustainability and inspire others to take action.



Case Study

St. Louis Lambert International Airport (STL), Airfield Maintenance Campus

Jacobs worked with St. Louis Lambert Airport to design a new maintenance campus for the airfield. Structural design for the was completed by the St. Louis structural team, led by Engineer of Record, Patrick O'Brien. The main building of the campus is the 112,600 ft² Head Building, which was also chosen to pursue LEED Silver accreditation.

When an initial LCA was done at the 60% phase of the design, it was determined that 34% of the building's embodied carbon was a result of the concrete used in the footings, slab on grade, and slab on metal deck. With this knowledge, the design team set its focus on reducing the Global Warming Potential (GWP) of the concrete through the structural specifications. A **project carbon budget** was established for the concrete in the Head Building structure. The idea behind using a project budget is that for all the concrete provided for the structure there will be a total maximum GWP limit rather than specifying a maximum GWP per concrete mix or application.

"As opposed to utilizing a traditional, prescriptive-based concrete specification to achieve the targeted reduction in GWP, the project concrete specifications were edited to be performance-based. Rather than dictating maximum water-cement ratios, SCM limits, and minimum cement content per each concrete strength class, the concrete specifications only specify mix ingredient limits where required by ACI 318-19 based on the concrete exposure class. This provides the mix designer the ability to substitute additional SCMs for cement and/or utilize innovative technologies, such as CarbonCure."

- Patrick O'Brien, P.E., S.E.

This was the first Jacobs project to incorporate ACI 323-24 Low-Carbon Concrete into project specifications. ACI 323 was used to help determine GWP benchmark values by concrete strength class, and to perform a preliminary total GWP calculation. Although ACI 323 is not mandated by the authority having jurisdiction for the project, it was a helpful reference for Jacobs' structural engineering and sustainability teams.



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03

Reduction Strategy & Reporting Plan

Reduction Strategy

To reduce embodied carbon in our structural designs, we are first focusing on analyzing sustainability strategies, educating engineers on embodied carbon and ramping up efforts to collect data. As we look to the future, it is important to develop embodied carbon reduction workflows and tools that can be applied to a wide variety of projects that are in different stages of design development.

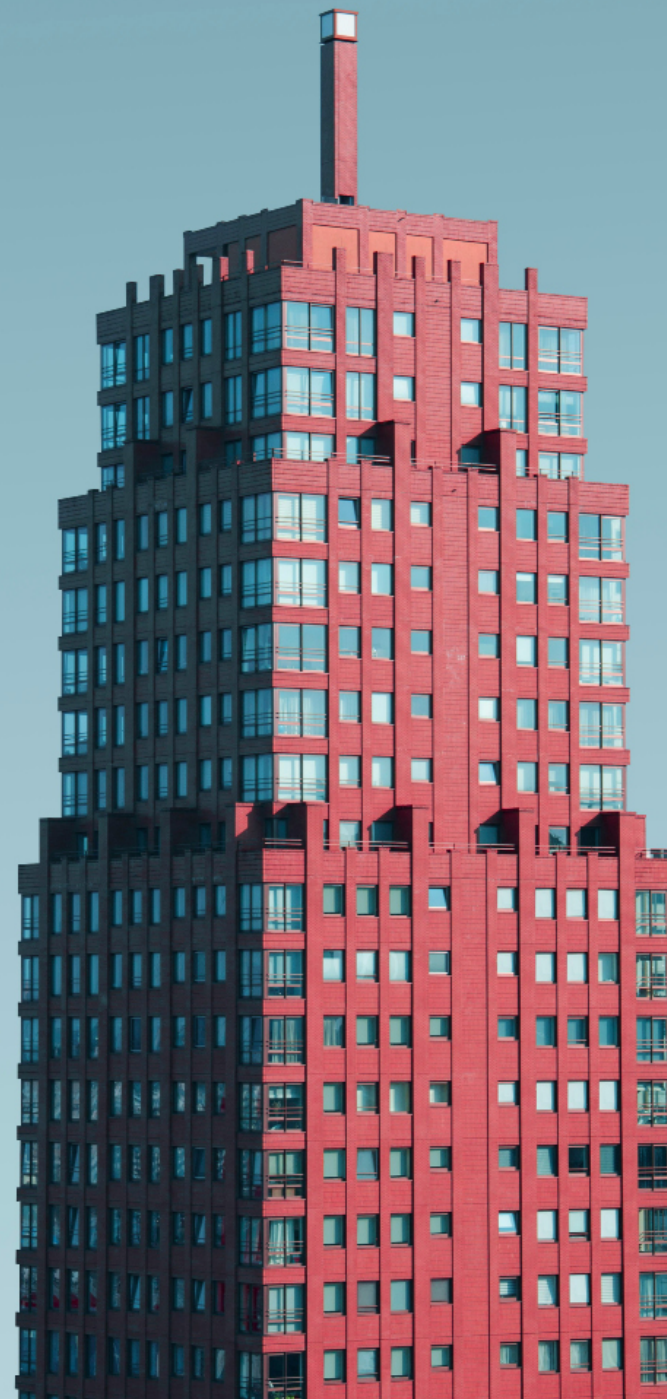
In February 2025, Jacobs launched Evolve, a new Artificial Intelligence (AI) feature in our sales and project delivery tools. Evolve will automatically provide customized recommendations about how to include sustainability in our client proposals and projects. This new tool opens up opportunities to embed embodied carbon tracking and reductions in our projects, current and future.

Short Term Goals:

- Track and submit embodied carbon data on at least double the amount of projects required by the SE 2050 program.
- Establish an internal embodied carbon task force to provide technical and sales support.

Long Term Goals:

- Develop and implement an automated embodied carbon workflow to enable engineers to quickly identify hotspots within our structure and provide strategies to reduce embodied carbon.
- Develop a synergistic carbon analysis workflow to harmonize Jacobs' AIA 2030 and SE 2050 efforts and collect operational and embodied carbon data on all of our projects.



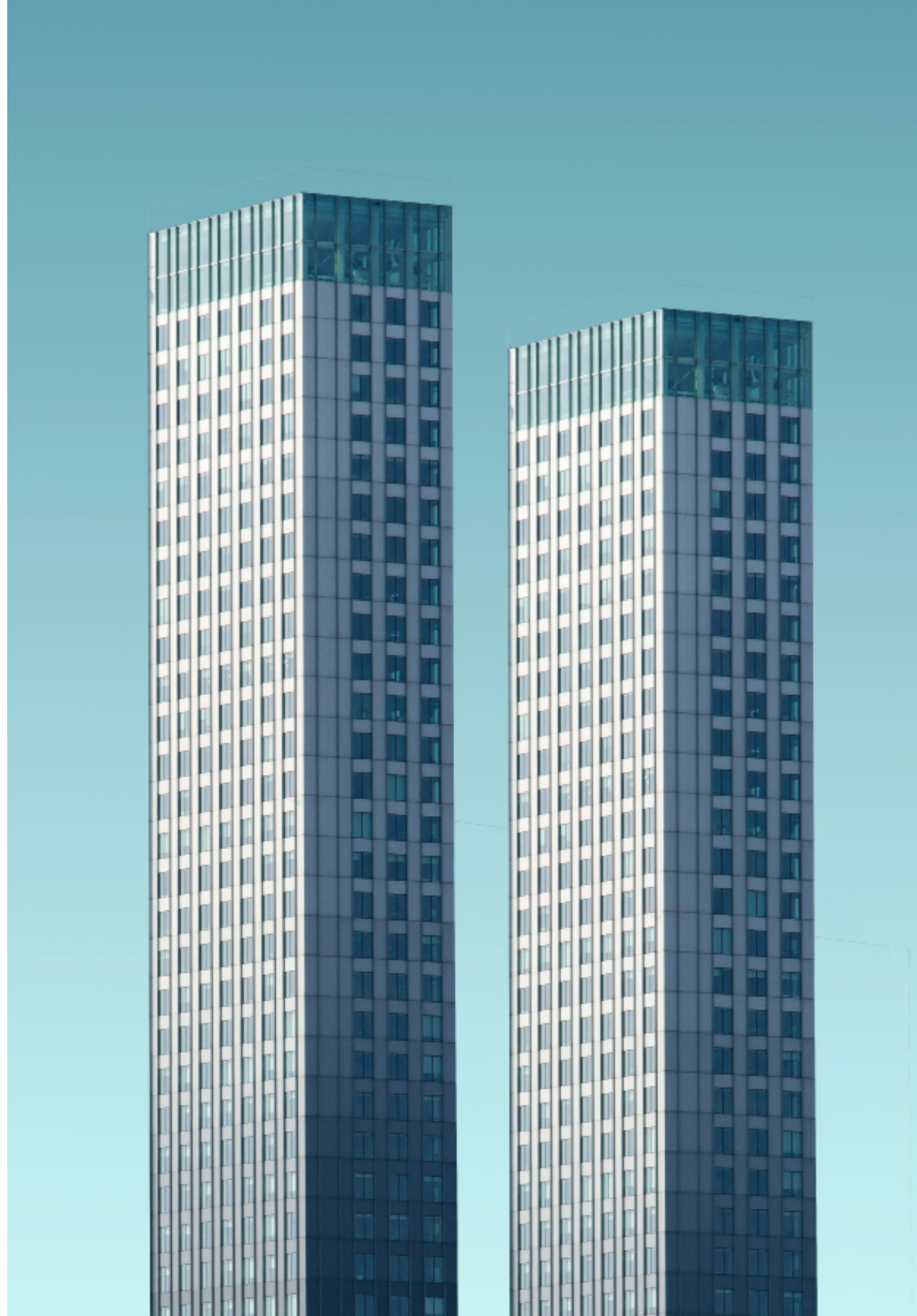
Reporting Plan

Jacobs has in-house Life Cycle Assessment (LCA) experts that are providing support to structural engineers. Depending on the stage of building design, the embodied carbon reporting and calculation methodology varies.

During the early design phases of a project, structural engineers perform hand calculations to determine rough estimates of material mass which are used with high level carbon emission factors to generate embodied carbon estimates. Once the structural design has progressed further, BIM models can be utilized along with LCA software to conduct detailed analyses based on more accurate material quantities.

When finding Environmental Product Declaration (EPD) data for our projects, we often use the EPD data available within the LCA software database. For high-impact materials, such as concrete and steel, we will also use *EC3: Embodied Carbon in Construction Calculator* and if necessary reach out to contractors and suppliers to obtain available EPDs in the project region.

Tally LCA is our most frequently used LCA tool to determine embodied carbon. We also use OneClick LCA in our US and European offices. The scope of the LCA depends on the standards set by the project. For example, when working on LEED projects, we include stages A to D. For the GSA IRA LEC program, we focus on stages A1 to A3.



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04

Elective Documentation

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Education:

Requirement 1: Provide a narrative of how the Embodied Carbon Reduction Champion will engage embodied carbon reduction at each office.

Internal newsletters are the main way that the global Jacobs structural engineering community are being engaged on embodied carbon reduction and SE 2050. We are also establishing a network of sustainability-passionate structural engineers to coordinate and expand data collection and strategy implementation efforts.

Requirement 2: Present at least (1) webinar focused on embodied carbon and make a recording available to employees. This could be created internally, pulled from an external source (with permission), or pulled from a publicly available source such as the Boston Society for Architecture. Include this resource in your orientation and on-boarding program.

Two embodied carbon webinars were shared through the Jacobs Community of Practice in 2024. We will continue to share a combination of internal presentations and external sources in a webinar format.

Additional Action: Create an Embodied Carbon digital resource wiki and/or forum on your firm's internal website for staff to create, share, and discuss Embodied Carbon educational resources.

Our Structural Engineering CoP has a "Reducing Embodied Carbon in Structures" channel that is dedicated to creating discussion and sharing information on reducing embodied carbon.

Reporting:

Requirement 1: Submit a minimum of (2) projects per U.S. office with structural engineering services to the SE 2050 Database. You are not required to submit more than (5) total projects across your firm, but we encourage you to submit as many as possible! Firms are expected to follow with the spirit of the SE 2050 Program in determining how many total projects your firm must submit. You do NOT need to consider offices that only offer construction administration services or offices with fewer than (5) full-time employees.

The minimum project submission requirement has been met and the corresponding data collection sheet has been submitted.

Goal: Compare the embodied carbon emissions from multiple projects across your firm. Analyze and document what data or pieces of information are most important and communicate the findings to your firm.

We plan to compare embodied carbon emissions from multiple projects across the firm and highlight key strategies and differences in a special edition of our internal newsletter

Reduction:

Goal: Develop and implement a workflow that makes it easier to make early design decisions based on embodied carbon.

The structural technology group is currently developing a workflow on reducing embodied carbon in concrete mix designs at the early stages of our projects.

Elective Action: Participate in a LEED, ILFI Zero Carbon, or similar project design charrette and speak to potential design considerations impacting embodied carbon.

In 2024, seventeen Jacobs projects representing 4,760,000 ft² achieved LEED certification with USBGC.

Elective Action: Incorporate sustainably harvested biogenic materials in at least one project.

Sustainably harvested biogenic materials are often used in Jacobs projects. In the future, Jacobs plans to submit an official SE 2050 Case Study highlighting a structure utilizing a mass timber structural system.

Advocacy:

Requirement 1: Describe the value of SE 2050 to clients. How can your design teams collaborate to reduce embodied carbon?

A structure designed with sustainability in mind often has optimized framing, materials and systems. A key to collaboration is communicating that structural sustainability can result in both cost-savings and reductions in greenhouse gas emissions. Collaboration between design teams is crucial in building projects that Jacobs leads - with Jacobs' commitment to AIA 2030, there are plans for deeper collaboration between our structural engineers and architects to deliver buildings that meet project requirements while reducing operational and embodied carbon.

Requirement 2: Publicly declare your firm as a member of the SE 2050 Commitment however you see fit (e.g. on your website, LinkedIn, or other social media).

An article was posted to our Jacobs website.

<https://www.jacobs.com/newsroom/news/jacobs-joins-structural-engineers-2050-commitment-program>

Goal: Give an external presentation on embodied carbon that demonstrates a project success or lessons learned. Get connected at a CLF regional hub near you and be sure to post the recording.

Jacobs' SE 2050 team is planning to create a seminar presentation highlighting our project successes that will be shared internally and externally.

Appendix A

Additional Information



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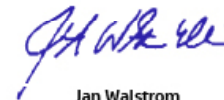
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