

An architectural rendering of a modern, multi-story building with a glass facade and a green roof. The building is situated on a city street corner, with a red brick sidewalk and a crosswalk visible in the foreground. The rendering shows the building's integration with its urban environment, including surrounding streets, trees, and other buildings.

LEO A DALY

Embodied Carbon Action Plan

2022



LEO A DALY is a global design firm working in a time of unprecedented change with pressures on multiple fronts – social, environmental, economic and political. Embracing the view that architecture must respond to the spirit of the age, our responsibility and our relevance lies in making the world a better place through work that responds to the challenges the era presents.

Our first priority, then, is to consider how our work performs in our physical, social and economic environment – how it accommodates its program and purpose, benefits users, makes community, and fits within the natural environment, the city, the economy and time. Performance, as a measure of a building's fit, is our focus and common design agenda. This agenda is not only our responsibility and contribution to the larger profession; it is at the core of a continual evolution that is essential to compete in the marketplace.

As a firm committed to client service, we recognize our responsibility to our client's agenda. As a multi-office firm, we bring multiple attitudes and sensibilities to the work of giving physical form to each agenda. To advance our practice as a global firm responding to the challenges of our day, we are committed to creating consistent and coherent design standards to bring to our work – an agenda that includes but also moves beyond that of the client, founded on core principles and a shared commitment to environmental, social and economic good.

Sincerely,

LEO A DALY

Steven A. Lichtenberger, AIA, NCARB, LEED AP
President, LEO A DALY



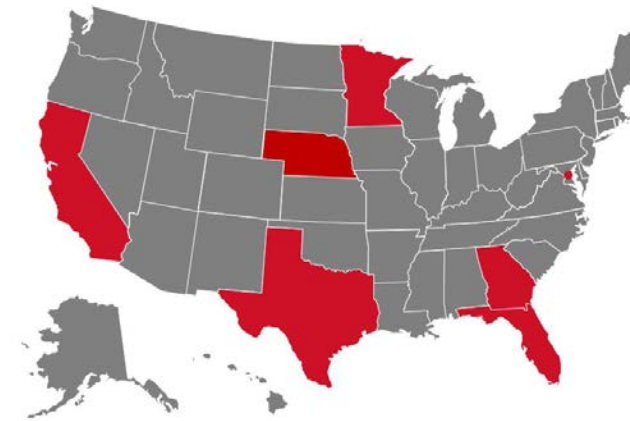
Executive Summary

At LEO A DALY, we believe that good design is, by definition, sustainable design. Over the last several years, we have systematically reworked our firmwide design approach to place building performance as the defining factor in our understanding of design excellence. Until recently, our main focus has been in minimizing operational carbon. But as we evolve to face new challenges, it has become clear that embodied carbon is the next frontier.

In 2022, we signed the SE2050 commitment, pledging to track, reduce, and ultimately aim to eliminate embodied carbon from our portfolio of work by 2050. With this step, we are making a public declaration that embodied carbon will join operational carbon as a defining interest in our design process. This will require significant effort over the next 18 years. And we are committed.

The push to eliminate embodied carbon is still in its early stages. At this point, we are focused on tracking and recording our embodied carbon data in the form of whole-building lifecycle assessments. This will allow us to set benchmarks, compare data with other firms, and be part of an industry-wide push toward achieving net-zero embodied carbon over the coming decades.

In the following report, you will learn about our efforts to-date and our future plans for educating, engaging, reporting and advocating for the elimination of embodied carbon in the built environment.



About LEO A DALY

LEO A DALY's diverse and creative teams combine planning, architecture, engineering and interiors expertise to offer a holistic response to our clients' challenges. For more than 100 years, we've created places that inspire wonder, connect communities and enable great things. Our design approach is based in inquiry, focused on innovation and rooted in social and ecological responsibility.

Founded in 1915 by Leo A. Daly, Sr., LEO A DALY is consistently ranked among the top design firms in the world. LEO A DALY rose to national prominence for pioneering the use of interdisciplinary project teams: a "whole project" approach that ensures maximum efficiency, coordination and client satisfaction. Today, under the leadership of Leo A. Daly III, FAIA, RIBA, FRAIA, we continue a legacy of innovation and commitment to client satisfaction, creating exceptional projects that enhance and enrich the human experience.

Strong client relationships have helped LEO A DALY become a leader in the design of the built environment, and one of the largest planning, architecture, engineering, interior design, and program management firms in the world. Since 1915, we have had an unyielding focus on design excellence to create exceptional spaces that enhance and enrich the human experience.

Our privately held practice has more than 400 design and engineering professionals in 10 studios worldwide. Our award-winning, diverse portfolio includes projects in a wide range of markets in more than 91 countries, all 50 US states, and the District of Columbia.

A global firm with
106 years
 of design experience
 practicing in
12 markets
 with studios in

Abu Dhabi · Atlanta · Dallas · Omaha
 Los Angeles · Miami · Minneapolis
 Washington D.C. · West Palm Beach

15 structural team members

320M SF LEED Certified Space

5 LEED Platinum Projects

5 Net Zero retrofit projects

145 staff with LEED, WELL or
 FitWel accreditation

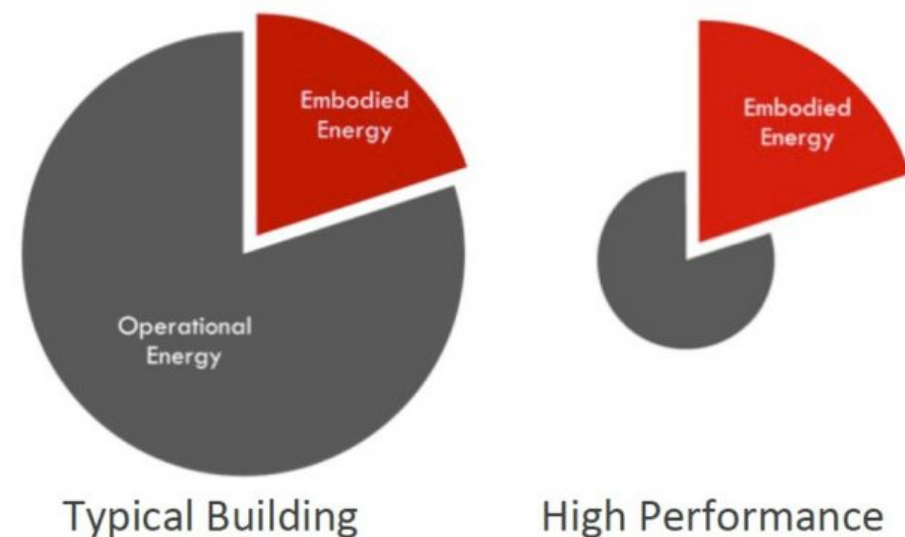
182 projects pursuing certification:
 170 LEED
 10 Green Globes
 1 Estidama
 5 WELL or FitWel



Embodied Carbon

Manufacture, transport and installation of construction materials

As energy codes and increased use of energy modeling drive down operational carbon emissions, the relative proportion of emissions associated with materials (embodied carbon) becomes more important.



Operational Carbon

Building Energy Consumption

About SE 2050

As an industry, and as a firm, we recognize that designing buildings to operate more efficiently is not enough to keep global temperatures under the 1.5-degree threshold that scientists believe will enable us to avoid the most serious impacts of climate change. We must also reduce embodied carbon, defined as the carbon emitted in association with the extraction, manufacturing and transport of building materials.

SE 2050 is our commitment to doing that. The Structural Engineers 2050 Commitment Program (SE 2050) is a response to the SE 2050 Challenge issued in 2019 by the [Carbon Leadership Forum \(CLF\)](#). The program was developed by the Sustainability Committee of the Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE). Following this comprehensive program, we will take part in the substantive embodied carbon reductions targeted collectively by the structural engineering profession.

The basic aims of the Program are to:

- **Educate** the structural engineering profession on the best practices of sustainable structural design and construction that will lead to net zero embodied carbon by 2050;
- **Engage** in an embodied carbon tracking program within the structural engineering profession thereby enabling the establishment of appropriate embodied carbon reduction targets until net zero is realized;
- **Report** on the current embodied carbon impacts and trends of various structural systems for different regions throughout the country; and
- **Advocate** and communicate with clients, the design community, and the public to build an understanding about embodied carbon and impacts of the built environment.

Education Plan

Embodied carbon touches every project we do as a firm. Therefore, it's imperative that every professional at LEO A DALY understand embodied carbon and be mindful of the effects their design decisions have on it.

Our initial embodied carbon education has focused on awareness. Our key messages are:

- To the environment, no design decision is free.
- Embodied carbon is everyone's job.

We've made it a priority in our education efforts to break down the assumption that embodied carbon is solely the responsibility of structural engineers. Although structural elements are the biggest contributor to embodied carbon in a typical building, roughly 40-50 percent of embodied carbon comes from other disciplines. As an interdisciplinary design firm, we are committed to understanding not only the cost of structural carbon, but the role played by architecture and interior design as well. Working together, we can address it holistically.

Repetition has been important to our education efforts. At the beginning of 2020, an internal survey found that most employees were unfamiliar with the concept of embodied carbon. At this point, after repeated exposure to the education efforts outlined below, we estimate 60 percent of designers across disciplines understand and appreciate embodied carbon. This percentage, and the actions related to it, will increase as we continue our education efforts.

Education activities completed to date

Presentations to employees since 2020

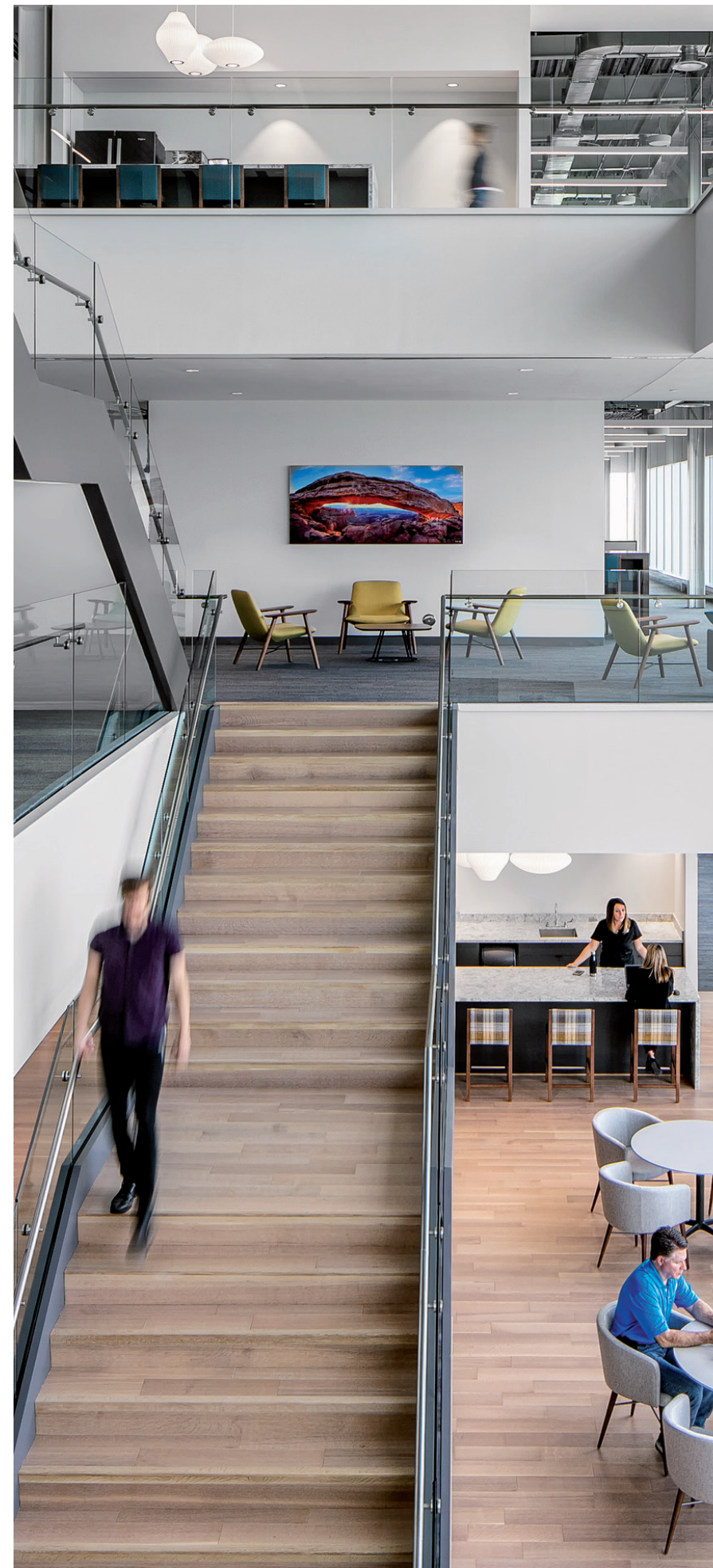
- "Embodied Carbon 101 – What is Embodied Carbon?"
- "Design for Resources" - AIA Framework for Design Excellence webinar
- "Whole Building Life Cycle Assessments"
- "Material Specific Embodied Carbon Reduction Strategies"
- "Mass Timber Systems"
- "Available Embodied Carbon Software Tools"
- "SE 2050"
- "Embodied Carbon Action Plan"

Audiences reached

- All-company (400+ design professionals)
- Greenworks Group – weekly forum
- Structural Engineering bi-weekly forum
- Design Exchange monthly forum

Future education goals

- Expanding scope, reach and frequency of presentations
 - Greenworks group
 - Bi-weekly updates at all structural meetings
 - More advanced topics
 - New employees
- Future subject matter
 - Software and database demonstrations
 - EC3 tool
 - Tally software
 - Setting project embodied carbon benchmarks
 - Embodied carbon estimating throughout design
 - Specification writing and editing as relates to embodied carbon
 - Client trends and Embodied Carbon requirements coming online for Federally funded projects
- Quarterly internal sustainability newsletter
- Embodied carbon as part of employee onboarding process
- Intern education
 - Embodied Carbon 101
 - Whole building life cycle assessments
 - General reduction strategies



The LEO A DALY GreenWorks Champions

The GreenWorks champions are a network of employees engaged in an ongoing dialogue around sustainability and high-performance. The goal is to enable a culture of sustainable design to permeate projects across regions and market sectors, so that we can quickly and earnestly address the role that the building industry plays in the most pressing challenges of the 21st century.



Kim Cowman
Interim Sustainability Lead



Zach Peer
Architecture 2030 Lead



Jake Zach
SE 2050 Lead



Nick Lassek
Performance Modeling Lead



Jennifer Gustafson
Responsible Materials Lead

Knowledge Sharing

Knowledge sharing as a key part of our strategy for communicating our embodied carbon reduction work outside of the company. We believe that by sharing our efforts, successes and lessons learned with clients, the design community and the public, we can make a real difference in the fight against climate change. We are committed to weaving sustainability into everything we do, and our goal is to make embodied carbon information a central part of our brand story. By doing so, we hope to inspire others to take action on this critical issue.

Our knowledge sharing strategy uses multiple channels to reach our key audiences of clients, the design community and the public. Each one will require us to develop unique messages that speak to that audience’s concerns, and each audience will be receptive to different channels.

- Our **clients** need to know the financial bottom line. We’ll develop targeted messages that demonstrate strategies we can use to reduce embodied carbon without increasing cost, and in some instances decrease cost. These messages will be delivered through channels like webinars, case studies and e-newsletters.
- The **design community** is mostly interested in innovative solutions. We’ll share knowledge about how we are innovating to meet our SE 2050 commitment. These messages will be delivered through channels like social media, industry conferences, trade show events and educational webinars.
- The **general public** is interested in learning about the issue of embodied carbon and what they can do to help reduce it. We’ll develop messaging that is informative and inspiring, delivered through channels like blog posts, infographics and social media posts.

By using a comprehensive and targeted approach, we’ll make sure all of our key audiences are reached with the knowledge they need.

Recent embodied carbon related external comms:

LEO A DALY Sustainability Month – April 2022

- Multiple social media posts explaining embodied carbon
- External announcement of our SE 2050 Commitment
- Information shared from the Carbon Leadership Forum

Conference presentations with embodied carbon content

- “Cutting Carbon through Adaptive Reuse”
- Fall 2021, Design DC conference
- “Lessons from a 100-year-old startup”
- Fall 2022, BD+C Women in Design & Construction Conference
- “Reinventing Social Nodes in the City”
- Summer 2021, ARDE-X international conference

LEO A DALY website

- Multiple blog posts on design responses to climate change
- Announcement of COP26 letter, signed in 2021 by LEO A DALY
- Video quantifying the carbon saved by LEO A DALY renovation project
- “Catalytic Typologies” white papers on adaptive reuse



Reduction Strategy

Our strategy for reducing embodied carbon starts with accurate tracking and benchmarking of our design portfolio. This will give us an accurate baseline of how much embodied carbon we are producing. Concurrent with this step, we are focused on researching and implementing design strategies that actively work to reduce embodied carbon.

We believe that this two-pronged approach will be the most successful in reducing our embodied carbon footprint. By accurately tracking and benchmarking our progress, we will be able to see the results of our efforts and adjust our strategy as needed. Additionally, by actively researching and implementing design strategies that reduce embodied carbon, we will be able to have a direct impact on reducing our emissions.

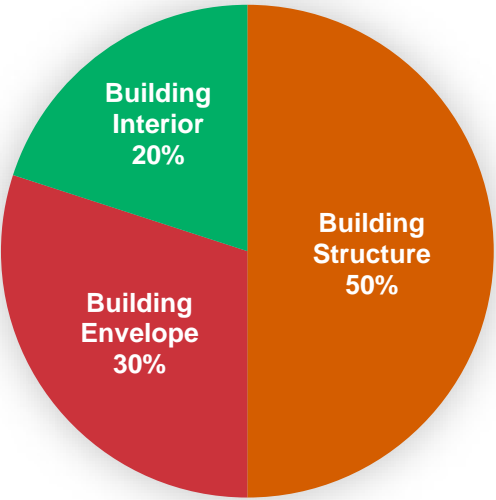
Reduction strategies implemented to date:

- Tracking embodied carbon on select projects
- Educating our employees on Embodied Carbon and how to reduce.
- Sharing the message of embodied carbon with clients, vendors, and industry
- Educating partnering structural firms on the benefits of reducing embodied carbon and how to account for it
- Marketing our expertise in adaptive reuse projects to add more to our portfolio
- Designing buildings for durability/flexibility to promote longer building life

Plan for future reduction:

- Select embodied carbon goals for projects in the Schematic Design Phase
- Create a standardized bill of materials to be included in project Whole Building Life Cycle assessments
- Select targets for Embodied Carbon Values for specific materials (E.g.: Concrete mixes)
- Conduct WBLCA's at selected project benchmarks (Schematic Design, Design Development, Contract Documents, As-Builts)
- Consider embodied carbon in system selection during schematic design and design development
- Include specification language requiring Environmental Product Declarations to be submitted for review for select materials. (Additionally, require EPD data to come in below specified benchmarks)
- Prioritize building structure and building shell for embodied carbon considerations.

Where does embodied carbon in our buildings come from?



Reporting Plan

Our efforts at tracking embodied carbon began in earnest in 2021, when we set a goal of tracking embodied carbon for six LEO A DALY projects during the year. We successfully met our goal of tracking six projects, and the resulting data has been submitted to the DDX as part of our 2030 Commitment. In the process, we have developed insights that have helped improve the tracking and performance of subsequent projects. Lessons learned include:

- Structural staff cannot be solely responsible for tracking embodied carbon. Architects and interior designers intimately familiar with the project are needed.
- Whole Building Lifecycle Analysis should be started at the beginning of a project to inform design, and at every stage in the project to refine initial estimates.

With the signing of SE 2050, our reporting plan has evolved once again. This year, we will:

- Calculate embodied carbon for structural materials using product-specific EPDs where available. If not available, we will use industry averages from software programs like Tally.
- EPDs will be gathered using databases such as the EC3 tool by Building Transparency. Individual project specific EPDs will be requested where appropriate on projects for materials procured.
- We will use Tally to conduct life cycle assessments and quantify embodied carbon during the design stage.
- During design, our LCAs will consist of systems level analysis using industry averages, including material life stages A through C. During material procurement, product level comparisons using EPDs will only consider stages A1-A3.
- We will calculate material quantities using Building Information Modeling, specifically Revit. Standards within the company will be formed as to which materials are included and which are excluded from modeling.



Elective Documentation

In accordance with the SE2050 guidelines, we will complete the following electives in the next year:

Education

- ✓ Distribute ECAP within your firm upon publishing.
- ✓ Make (1) webinar focused on embodied carbon available to employees.
- ✓ Have one representative of your firm (any employee) attend quarterly external education programs (e.g. webinar, workshop) provided by SE 2050, Carbon Leadership Forum, or other embodied carbon resources.

Reporting

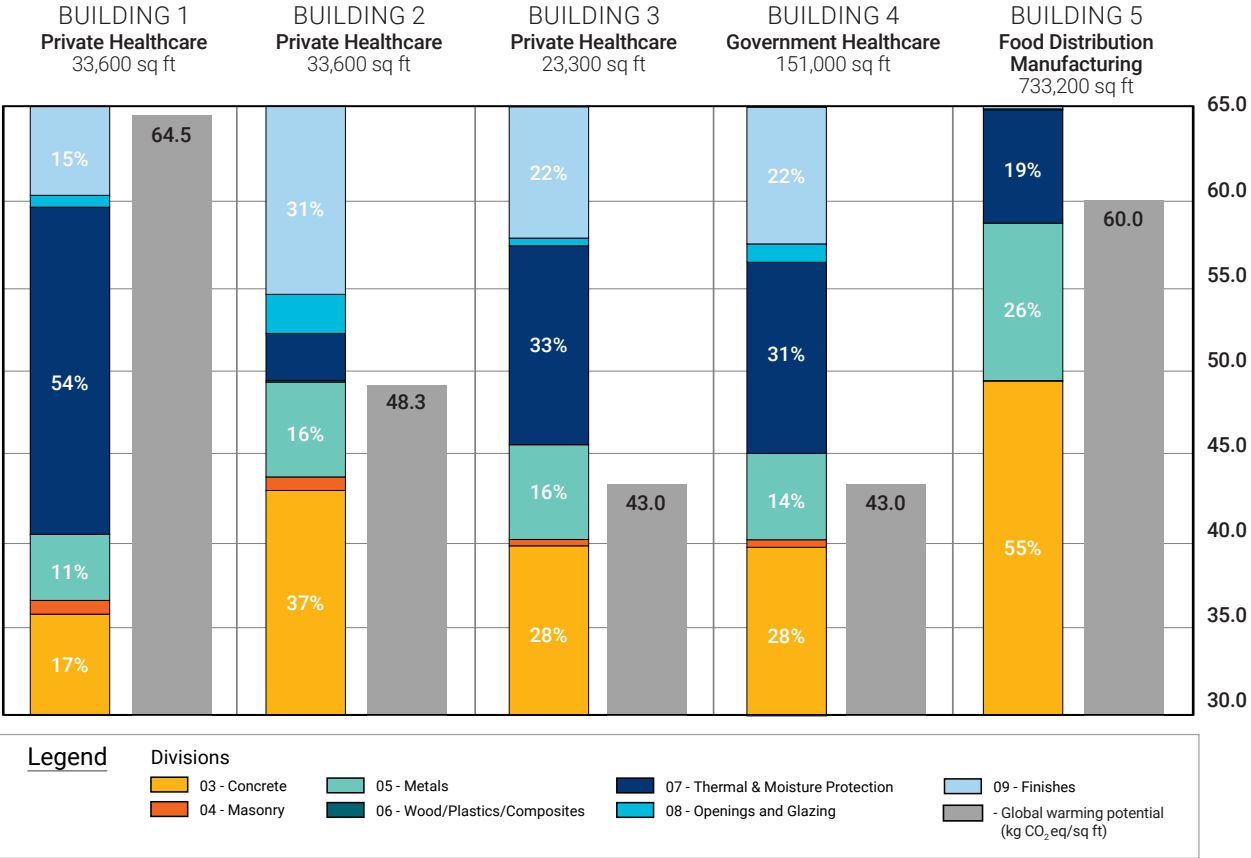
- ✓ Submit a minimum of (2) projects per U.S. office with structural engineering services to the SE 2050 Database. You are not required to submit more than (5) total projects.
- ✓ Report a greater percentage of projects than you did the previous year.

Reduction

- ✓ Complete an embodied carbon comparison study during the project concept phase.

Advocacy

- ✓ Describe the value of SE 2050 to clients. How can your design teams collaborate to reduce embodied carbon?
- ✓ Share your commitment to SE 2050 on your company website.
- ✓ Mentor a firm new to the embodied carbon space.



LEO A DALY

PLANNING

ARCHITECTURE

ENGINEERING

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National Headquarters
8600 Indian Hills Drive
Omaha, NE 68114-4039
402.391.8111

leoadaly.com



Front and back: 20 Massachusettes Avenue, Washington, D.C.



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LEO A DALY
8600 Indian Hills Drive
Omaha, NE 68114-4039
402.391.8111

leoadaly.com

March 31, 2022

Laura Champion
Director
Structural Engineering Institute

Re: Letter of Commitment to the SE 2050 Program

Dear Laura:

LEO A DALY is hereby signing on to the SE 2050 Commitment Program. LEO A DALY is a 700-person integrated design firm including architects, engineers, planners and interior designers with studio locations worldwide. We support the vision that all structural engineers shall understand, reduce, and ultimately eliminate embodied carbon in their projects by 2050.

LEO A DALY is committed to serving not only our clients, but the communities that our building designs reside in. We recognize the growing threat global climate change presents to these communities, and we are committed to promoting sustainability through our building designs. We are a current signatory of the Architecture 2030 program. As we continue to work to reduce building operational carbon emissions, we know embodied carbon comprises a greater portion of the overall building emissions. Starting in 2020, we initiated a plan to reduce embodied carbon emissions. The aforementioned plan included designating an internal embodied-carbon subject matter expert and developing protocols to track the embodied carbon emissions of projects. We rolled out a series of webinars for employees about embodied carbon and strategies toward reducing emissions. Signing on to SE2050 signifies our continued commitment to reducing embodied carbon emissions and ultimately eliminating emissions in our building designs by 2050.

We therefore commit LEO A DALY 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,

Steven Lichtenberger
President
LEO A DALY

Jacob Zach
Structural Engineer
Embodied Carbon Champion
LEO A DALY

Abby Goranson
Director of Structural Engineering
LEO A DALY

LEO A DALY & LION

SharePoint

Search in SharePoint

The Hub

Quicksite

Design, Sustainability & Production

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People Operations

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Technology

Office Locations


The Hub

Send to

Immersive Reader



Structural Engineers 2050 Commitment



Zach, LEAD
Engineer, Structural

This spring, LEO A DALY signed the SE2050 Commitment, pledging to understand, reduce and ultimately eliminate embodied carbon in our projects by 2050.

For years, the primary focus of sustainable design has been reducing the amount of energy that buildings use in operation. This effort leaves out embodied carbon – the carbon emitted in the lifecycle of building materials, including manufacturing, transportation, installation, and disposal – which accounts for about a third of building-related carbon emissions.

The push to eliminate embodied carbon is still in its early stages. Our effort now is to track and record our embodied carbon data in the form of whole-building lifecycle assessments. This will allow us to set benchmarks, compare data with other firms, and be part of an industry-wide push toward achieving net-zero embodied carbon over the coming decades.

SE2050 is a structural engineering discipline led initiative, as structural systems account for about 50% of a building's total embodied carbon. However, as an integrated design firm, we will not limit our efforts at reducing embodied carbon only to structural systems. Rather, we will leverage our multi-disciplinary practice to think beyond structural systems and consider embodied carbon holistically, including exterior shell materials, interior finishes, and other elements.

About SE2050

SE 2050 stands for the Structural Engineers 2050 Commitment Program. It was developed by the Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE) in response to a challenge issued in 2019 by the Carbon Leadership Forum (CLF). This comprehensive program has been designed to ensure substantive embodied carbon reductions in the design and construction of structural systems by the collective structural engineering profession.


The goal of the Program is to provide an accessible sustainability program, for individual structural engineers and structural engineering firms, with an accountable commitment strategy of active engagement on projects and sharing of information all in the name of achieving zero net carbon structures by 2050. The basic aims of the Program are to:

- Educate the structural engineering profession on the best practices of sustainable structural design and construction that will lead to net zero embodied carbon by 2050
- Engage in an embodied carbon tracking program within the structural engineering profession thereby enabling the establishment of appropriate embodied carbon reduction targets until net zero is realized
- Report on the current embodied carbon impacts and trends of various structural systems for different regions throughout the country
- Advocate and communicate with clients, the design community, and the public to build an understanding about embodied carbon and impacts of the built environment

What's next?

Education and further information on how the SE2050 Commitment will affect future projects will be forthcoming. For now, just know this is a high priority for LEO A DALY, and something we're committing to without reservation. Make it part of your personal design philosophy as we work it into that of the firm. If you are interested in this important topic, please reach out to Jake Zach to get involved.

Learn more about SE2050 [here](#).



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March 31, 2022

Laura Champion
Director
Structural Engineering Institute

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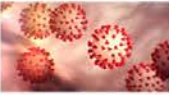
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