

# SE 2050 EMBODIED CARBON ACTION PLAN 2023



# 01 EDUCATION

Over the past year, we worked to ensure that we met the goals established in our 2022 Embodied Carbon Action Plan and continued to educate our employees and our clients about embodied carbon.

- 1 Our embodied carbon reduction champions engage with employees at all levels. We continue to train project managers and BIM leads in each of our offices to track material quantities and embodied carbon throughout the project lifecycle and engage with Managing Directors in each office to ensure our tracking goals are met.
- 2 We are committed to having a member of each office involved with their local Carbon Leadership Forum (CLF) hub, as well as attend seminars provided by SE 2050.
- 3 FastStart, our company-wide onboarding program, exposes all new engineers at Walter P Moore to sustainable design and embodied carbon within their first year at Walter P Moore.
- 4 As part of Better Practices, Walter P Moore's firm-wide education presentation series, we presented embodied carbon tracking and reduction best practices to the entire firm. We are committed to giving an updated embodied carbon tracking presentation annually.
- 5 Our Sustainable Design Community of Practice establishes best practices for embodied carbon tracking and shares knowledge across the firm through CoP representatives from each office.

**Lessons Learned:** Engaging leadership in each office has been instrumental in driving participation in embodied carbon education and achieving our tracking and reduction goals.

**"AS DESIGN PROFESSIONALS, WE SHAPE THE BUILT WORLD. HENCE, WE SHOULD BE COGNIZANT OF THE CARBON FOOTPRINT OF OUR DESIGN SOLUTIONS. WE NEED TO USE CARBON-SMART MATERIALS AND ASPIRE TO BE CLIMATE POSITIVE. AT WALTER P MOORE, WE HAVE MADE THIS COMMITMENT AND ARE DRIVEN BY THE CHALLENGE."**

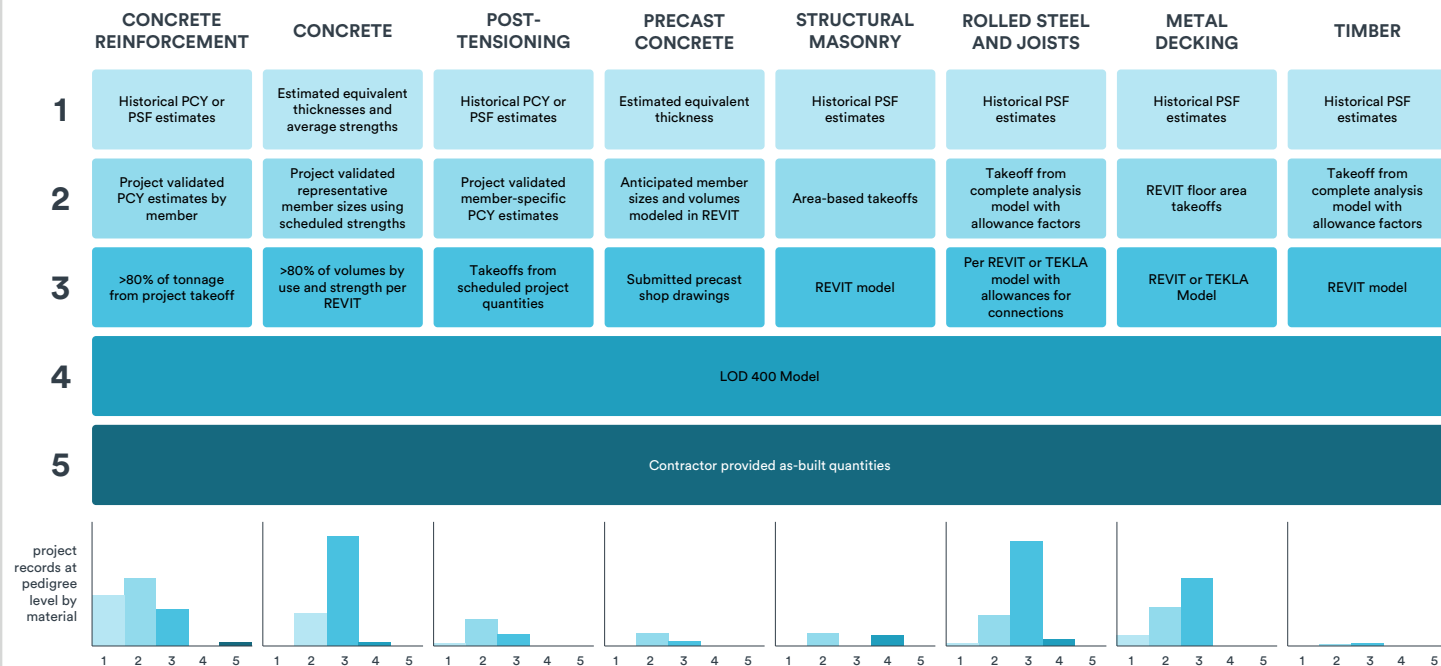
**— Dilip Choudhuri, PE, President  
and CEO of Walter P Moore**





# 02 REPORTING

**Walter P Moore's SE2050 Bill of Materials Pedigree Table**



During 2023, we are continuing to refine and develop our carbon tracking process. Our SE2050 data tracking includes projects with embodied carbon numbers calculated in a variety of ways. Some are the result of Whole Building Lifecycle Assessments (WBLCA) performed for the LEED Building Lifecycle Impact Reduction Credit and were based on Construction Document level quantities with life cycle phases and impact information from Athena Impact Estimator or Tally. Others are based on cradle-to-gate environmental impact data from industry average and supplier specific EPDs and early-stage quantity estimates. For all data, we are tracking the project phase as well as the source of both the bill of materials and impact data. To help us understand the level of uncertainty associated with material quantities for each project, we developed a classification system for quantity data.

We submitted five projects to the SE2050 database during 2022, and plan to submit a minimum of five more projects in 2023.

## BILL OF MATERIALS PEDIGREE TABLE

Our carbon tracking in previous years highlighted the importance of tracking embodied carbon during multiple project stages. Early assessments enable system level design comparisons, while final comparisons are important to provide the best estimate of the project's total embodied carbon. Both are useful, however the fidelity of the bill of materials may vary widely. Our past efforts taught us that it may be tempting to condense a data set into carbon intensities in kg/m<sup>2</sup> and make comparisons. However, comparisons should only be made of "like to like" data points. To enable a better understanding of the fidelity of the bill of materials of any data point, as well as to understand where to invest effort in carbon tracking, we developed the adjacent "Bill of Materials Pedigree Table". This approach allows us to understand and classify the results of our carbon calculations based on the fidelity of the underlying bill of materials calculation.

# 66%

of total new design  
revenue tracked in 2022

# 03 REDUCTION

This year we achieved our goal of tracking embodied carbon for projects representing over 50% of 2022 revenue. This helped us to identify trends across projects and identify projects with the greatest opportunities for embodied carbon reduction. We plan to continue with the following strategies to track and reduce embodied carbon over the next year:

- 1 Continue to track embodied carbon for projects representing 50% of our structural engineering group new design revenue for the year 2023.
- 2 Continue incorporating data visualization into our 2023 and 2024 embodied carbon tracking, for the purpose of helping our team and our clients understand the embodied carbon hot spots as well as trends across our projects.
- 3 We have incorporated embodied carbon limits into our general notes and our classes of concrete matrix.
- 4 We required concrete EPDs as part of submittal review on a project in the New York metro area. When the initial submittal came in with a GWP that didn't meet our specifications, we worked with the ready-mix supplier to select a mix that met the GWP limits we developed for the project.

**Lessons Learned:** Designers must consider not only the primary structural material, but the embodied carbon of all components and transportation distances and modes.



## PROJECT HIGHLIGHT

### SAN JACINTO COLLEGE ANDERSON-BALL CLASSROOM BUILDING Pasadena, Texas

The Anderson Ball Building at San Jacinto College is the largest instructional building in the U.S. constructed from mass timber. Like many other mass timber buildings, it prominently features exposed timber elements and highlights carbon reductions. However, the project's carbon considerations did not stop at simply using timber, the project also considered other aspects of efficiency. The mass timber structure enabled re-use of existing foundations from a previous building on a portion of the site. Where new foundations were required, they used concrete that minimized embodied carbon. The team also considered emissions from transport of the timber. Many mass timber projects in Texas involve considerable transportation distances from forest to fabricator to site, and in many cases this transport is done by truck. The timber supplier selected for the Anderson Ball project maintains their forests and was able to deliver by rail. This significantly reduced not only carbon emissions, but also smog and other environmental impacts.



# 04

## ADVOCACY & KNOWLEDGE SHARING

Walter P Moore is committed to sharing knowledge and data to accelerate embodied carbon reduction throughout the design and construction industry. We remain active in the leadership of SE 2050 as well as many industry organizations advocating for reductions in embodied carbon.

1

We plan to continually harvest and share our Embodied Carbon stories to advance market transformation. We share our stories through conference presentations, webinars, articles, and project case studies. We published our first collection of embodied carbon stories in [Embodied Carbon: A Clearer View of Emissions.](#)

2

We have sponsored the Carbon Leadership Forum (CLF) since 2014 and actively participate in local hubs. Our employees were co-founders of the CLF hubs in Atlanta, Dallas, and Los Angeles.

3

We provide educational presentations to our clients about embodied carbon, lifecycle assessment, and the importance of collaboration in reducing embodied carbon in our projects.

### POLICY ENGAGEMENT

As we work to reduce embodied carbon in our projects and advocate for change in the design and construction industry, we recognize that policy action is needed to achieve transformational change. Policy has the potential to increase data transparency and availability by incentivizing the creation of EPDs, drive demand for low-carbon products, and create consistency in tracking and measuring embodied carbon on projects. Our goal in 2023 is to engage with policy makers at the local, regional, and national levels to communicate the importance of low-embodied carbon procurement policy and whole building lifecycle assessment, and to provide technical feedback on embodied carbon policy. We hope that our insights and experiences achieving real embodied carbon reductions on our projects can help policymakers design effective embodied carbon policy and move the industry forward.

*Below is a partial list of embodied carbon presentations and publications by our experts in 2022:*

**Introduction to Embodied Carbon, Carbon Leadership Forum Dallas, February 2022**

**Embodied Carbon and the Building Enclosure, Boston Building Enclosure Council, March 2022**

**Embodied Carbon Updates - The SE2050 Commitment Program, AIA COTE Atlanta, March 2022**

**Performance Based Concrete Specifications, SEAOSC Sustainability Summit, March 2022**

**Decarbonize Now: The Next Frontier in Glass Facade Innovation, IGS Magazine, Spring 2022**

**Embodied Carbon Roundtable - The Most Important Metric of Efficiency, Structures Congress, April 2022**

**A Sustainability Awakening – Changing Trajectories of the Building Sector – Life Cycle Assessment, Structures Congress, April 2022**

**The Economics of Embodied Carbon: Driving Change Quickly, Joint Engineer Training Conference & Expo, May 2022**

**Performance Based Concrete Specifications, AIA/SEAOSC Panel, May 2022; AIA Climate Action Webinar Series**

**Commercial Trends: Digital Practice & Embodied Carbon, Jamestown, June 2022**



**Interiors LCA Case Study: Walter P Moore - Washington DC Office, NECON 2023, June 2022**

**Embodied Carbon: What Structural Engineers Need to Know, SEAOG YMG, August 2022**

**Embodied Carbon: What Structural Engineers Need to Know, SEAoN Annual Meeting, September 2022**

**Applying Low Carbon Materials, HESTIA 2022 Kickoff, September 2022**

**Embodied Carbon and Concrete, ACI Central Texas, October 2022**

**Embodied Rigor, USGBC Convene and Connect – Austin, October 2022**

**Own Your Concrete's Carbon Footprint, Greenbuild, October 2022**

**Embodied Carbon as a Performance Metric, AIA Raleigh, November 2022**

**Embodied Carbon as a Performance Metric, AIA Charlotte, November 2022**

**Structural Engineer's Role in Addressing Climate Change, NCSEA Summit Chicago, November 2022**

**Reuse to Reduce: An Embodied Carbon Charette, Greenbuild, November 2022**

**Walter P Moore's 2022 Embodied Carbon Tracking, CLF Los Angeles, December 2022**

**Strategies to Reduce Carbon Impacts of Refrigerants and Concrete, Austin Energy Green Building Building Seminar, December 2022**



# 05 OUR EXPERTS

Our plans for the next year involve continued involvement in the Carbon Leadership Forum and expanded advocacy on the importance of embodied carbon reduction to our clients and our peers in the industry.

Experts from Walter P Moore are leaders in these industry organizations and committees:

- Carbon Leadership Forum (CLF) — Advisory Board
- CLF Los Angeles Hub — Founding Co-Chair
- CLF Atlanta Hub — Founding Co-Chair
- CLF Dallas Hub — Founding Co-Chair
- NCSEA Sustainable Design Committee — Founding Chair
- SEI Sustainability Committee — Founding Chair, Current member
- SE2050 Leadership Group
- SE2050 Advisory Council
- ACI 318N — Sustainability
- AISC Sustainability Committee
- USGBC Materials and Resources Technical Advisory Group
- USGBC Georgia Market Leadership Advisory Board
- AIA COTE Atlanta Steering Committee
- Lifecycle Building Center Advisory Board
- Façade Tectonics Institute Embodied Carbon Working Group
- AIA LA COTE

## EMBODIED CARBON REDUCTION CHAMPION



**DIRK KESTNER, PE, SE, LEED AP BD+C, ENV SP**

Dirk Kestner, a Principal and Director of Sustainable Design at Walter P Moore, is our Embodied Carbon Reduction Champion. He is based in Austin and was previously a structural designer and project manager. In his current role he works with all our offices across North America with a focus on structural design and leveraging whole building life cycle assessment to reduce embodied carbon. He is a member of SEI's Sustainability Committee, a member of the SE 2050 leadership group, a current board member of The Carbon Leadership Forum, and was previously Chair of the USGBC Materials and Resources Technical Advisory Group.

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## STRUCTURAL ENGINEERING



**KELLY ROBERTS, PE, SE, LEED AP BD+C**

Kelly Roberts is a Principal and Senior Project Manager and co-chairs Walter P Moore's Sustainable Design Community of Practice for Structures. She is a founding board member of the Lifecycle Building Center and current Advisory Board member. Kelly is a Market Leadership Advisory Board member of USGBC Georgia, USGBC Materials & Resources Technical Advisory Group member, co-chair for Atlanta Carbon Leadership Forum HUB, and AIA Atlanta COTE Steering Committee member. She is a member of ACI 318N Sustainability, founding chair of the NCSEA Sustainability Committee and SEI Sustainability Committee SE 2050 Advisory Council member.

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## ENCLOSURE ENGINEERING



**LAURA KARNATH, AIA, NCARB, LEED AP BD+C**

Laura Karnath is a Senior Enclosure Technical Designer in Walter P Moore's Los Angeles office. She co-chairs Walter P Moore's Sustainable Design Community of Practice for Structures and leads the embodied carbon efforts for Enclosure. She is a founding co-leader of the Carbon Leadership Forum Los Angeles Hub, a member of the Façade Tectonics Institute embodied carbon working group, and a member of the AIA LA Committee on the Environment.

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# WHO WE ARE

Walter P Moore is an international company of engineers, architects, innovators, and creative people who solve some of the world's most complex structural, technological, and infrastructure challenges. Providing structural, diagnostics, civil, traffic, parking, transportation, enclosure, technology consulting, and construction engineering services, we design solutions that are cost- and resource-efficient, forward-thinking, and help support and shape communities worldwide. Founded in 1931 and headquartered in Houston, Texas, our 800+ professionals work across 24 U.S. offices and six international locations.