

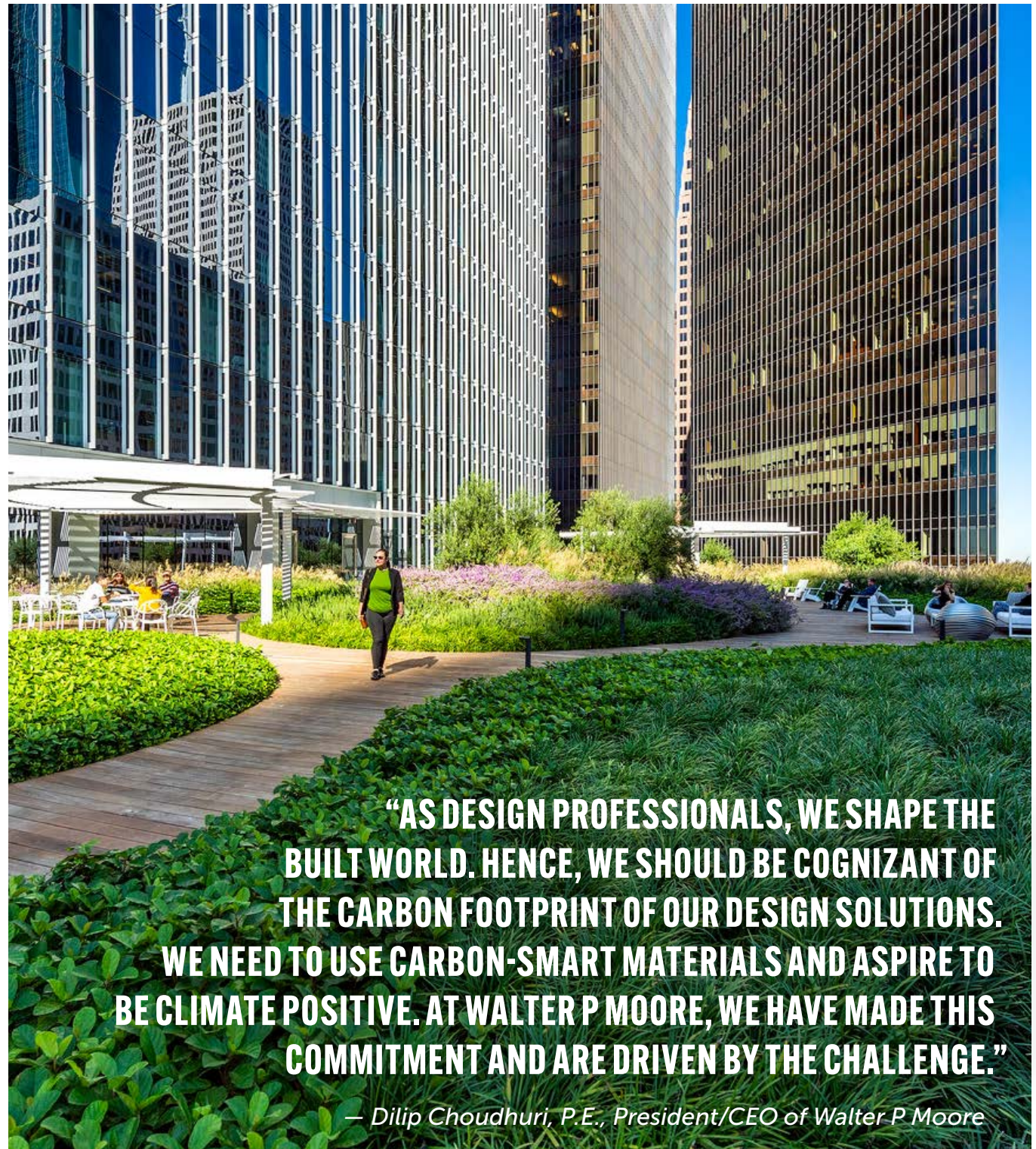
SE 2050
EMBODIED CARBON
ACTION PLAN
2021



01 EDUCATION

On April 7, 2021, our CEO Dilip Choudhuri announced at the annual shareholders meeting that Walter P Moore had joined the SE2050 commitment. Our team is excited to begin this journey to drive reduction of carbon emissions in the AEC industry.

- 1** We kicked off the implementation of our Embodied Carbon Action Plan (ECAP) with an EC101 presentation during our firm-wide Better Practices series on June 11th.
- 2** We are creating a firm-wide education program for embodied carbon, with presentations customized for each practice area. Dirk Kestner, our Director of Sustainable Design and Embodied Carbon Reduction Champion, will give embodied carbon 101 talks to each office.
- 3** We are sharing the entire SE 2050 library of resources with the staff of all our Walter P Moore offices.
- 4** We are committed to having a member of each office involved with their local Carbon Leadership Forum (CLF) community (HUB), as well as attend quarterly seminars provided by SE 2050. The office champion will then present a brief summary of the event back to the team.
- 5** 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.

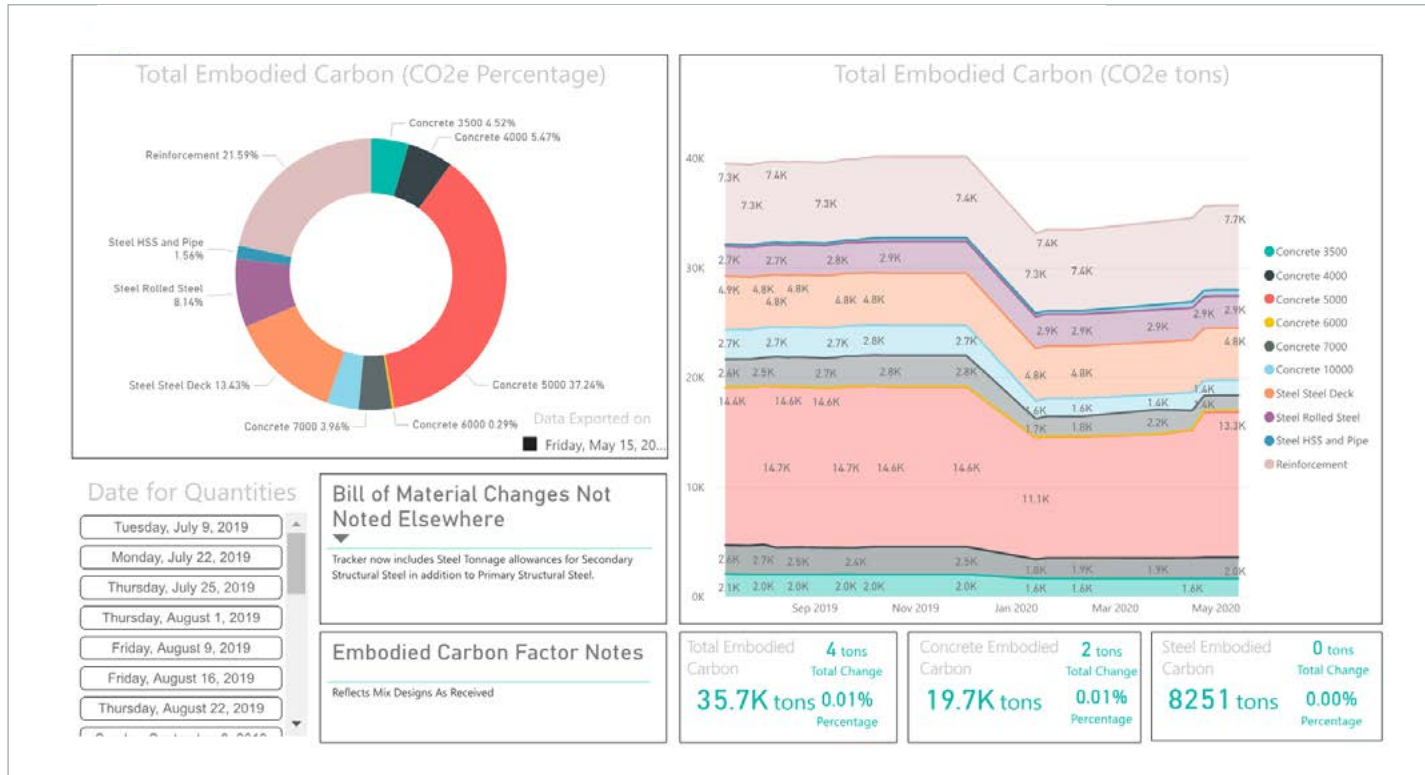


“AS DESIGN PROFESSIONALS, WE SHAPE THE BUILT WORLD. HENCE, WE SHOULD BE COGNIZANT OF THE CARBON FOOTPRINT OF OUR DESIGN SOLUTIONS. WE NEED TO USE CARBON-SMART MATERIALS AND ASPIRE TO BE CLIMATE POSITIVE. AT WALTER P MOORE, WE HAVE MADE THIS COMMITMENT AND ARE DRIVEN BY THE CHALLENGE.”

— Dilip Choudhuri, P.E., President/CEO of Walter P Moore

02 REPORTING

PROJECT EMBODIED CARBON QUANTITY TRACKER



During 2021 we will refine our carbon tracking process, and plan to use this year to develop a taxonomy of tracking methodologies to define the detail of both the bill of materials and the embodied carbon numbers for assemblies.

We expect that at the culmination of this year we will have projects with embodied carbon numbers calculated in a variety of ways. Some will be the result of Whole Building Lifecycle Assessments (WBLCA) performed for the LEED Building Lifecycle Impact Reduction Credit and will be based on Construction Document level quantities and life cycle phases and impact information contained in tools like The Athena Impact Estimator or Tally. We expect others to be based on data from industry and supplier specific EPD's and to contain only grade to gate impact data. For all data we plan to track the source of both the bill of materials, and impact data.

« We created a custom embodied carbon estimation tool to track embodied carbon over the course of the design phases of our projects. This tool uses EPD data and interfaces with our REVIT models.

PROJECT HIGHLIGHT

ORACLE WATERFRONT CAMPUS

Austin, TX

Oracle Waterfront Campus was one of the first projects in Austin to use WBLCA to support its LEED Gold and Austin Energy Green Building (AEGB) 4 Star sustainability ratings. The project employed a collaborative approach between engineer, general contractor, and ready mix supplier to fine tune the concrete mix design as well as the stressing schedule and required strength at stressing to minimize embodied carbon. This achieved a nearly 15% reduction in embodied carbon from typical construction. The project was recognized with a 2018 Urban Land Institute Impact Award for Most Influential Project.



03 REDUCTION

We plan to employ the following strategies to track and reduce embodied carbon over the next year:

- 1 Walter P Moore aims to track embodied carbon for projects representing 50% of our structural engineering group new design revenue for the year 2021.
- 2 We plan to incorporate data visualization into our 2022 embodied carbon tracking, for the purpose of helping our team understand the embodied carbon hot spots in our projects and to communicate them to our clients.
- 3 We have incorporated embodied carbon limits into our general notes and our classes of concrete matrix.
- 4 We are currently in discussions with an owner and other members of a design team to encourage development of mix specific EPD's for ready mix concrete in a city that currently does not have mix specific EPD's.

PROJECT HIGHLIGHT



CITY OF HOPE ADMINISTRATION OFFICE BUILDING

Duarte, California

City of Hope envisioned a high-performance building that embraced holistic carbon reduction. WBLCA was essential to the project achieving LEED v4 Gold. Walter P Moore led the WBLCA and collaborated with the concrete supplier to use imported higher quality aggregates from British Columbia. The WBLCA showed that any emissions due to aggregate transport were more than offset by the savings in portland cement. This strategy saved nearly 3 million pounds of CO₂e.



04 ADVOCACY

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. In late 2020 we published our annual Stewardship Report focused on Embodied Carbon and reduction strategies.

1 We announced our commitment to SE2050 on our website on Feb 1, 2021:

[View Our Announcement Here](#)

2 In 2020, we published our stewardship report **Embodied Carbon: A Clearer View of Emissions**, a resource that communicates the importance of addressing embodied carbon, provides a variety of perspectives on the topic, and details essential measures the AEC industry can incorporate to ensure near-term reductions in GHG emissions.

3 We have sponsored the Carbon Leadership Forum (CLF) since 2014 and are a Pilot Sponsor of The Embodied Carbon in Construction Calculator (EC3) tool.

4 In 2018 we established a Life Cycle Assessment & Embodied Carbon group within our Sustainable Design Community of Practice

5 We have included language identifying our firm as a member of the SE 2050 Commitment on our boilerplate proposal language.



Below is a partial list of embodied carbon presentations and sessions our experts have given during 2020 and in the first half of 2021.

Embodied Carbon and Whole Building Life Cycle Assessment, Part 1
AIA Georgia, June 2021

Sustainable Design & Embodied Carbon: What Structural Engineers Need to Know National Council of Structural Engineering Associations, May 2021

Sustainable Design & Embodied Carbon: What Structural Engineers Need to Know SEAONY, May 2021

Embodied Carbon
DVASE, May 2021

The Elephant in the Room: Addressing Embodied Carbon in Practice, Living Future '21 , April 2021

Embodied Carbon and Whole Building Life Cycle Assessment, Part 1
AIA Georgia, March 2021

The Building Envelope: Where Operational and Embodied Carbon Meet
CE Strong, March 2021

Embodied Carbon Reductions in Practice and SE 2050 Commitment Program Actions, CLF Vancouver, January 2021

Structural Engineering - Digital Practice & Sustainability
Auburn University, April 2020

Embodied Carbon as a Performance Metric, AIA Las Vegas, November 2020

Modeling Lifetime Carbon: Operations + Embodied + Transportation Greenbuild 2020, November 2020

Introduction to SE2050
Carbon Leadership Forum Los Angeles, November 2020

Structural Engineers make the Commitment: Launch of SE 2050, Greenbuild 2020, November 2020

Case Studies of Collaborative Embodied Carbon Reduction through WBLCA and EPD's, Global Concrete Summit, November 2020

Embodied Carbon and Structural Materials National Council of Structural Engineers Association 2020 Summit, November 2020

Achieving Embodied Carbon Reductions, CLF Rocky Mountain, October 2020

City of Hope Administration Office Building Case Study, CLF Los Angeles, Oct 2020

Do You Consider Embodied Carbon As A Design Metric? Zak Virtual Festival of Facades, September 2020

Whole Building Life Cycle Assessment
Carbon Leadership Forum ATL HUB, August 2020

Embodied Carbon as a Performance Metric, AIA Austin, August 2020

Reducing Embodied Carbon Through Data Driven Decisions. Gulf Coast Green, June 2020

LEED v4.1 Ask the Experts: Materials, June 2020

Paths to Zeroing-Out Embodied Carbon by 2040, Rocky Mountain Green, May 2020

Embodied Carbon as a Performance Metric
Carbon Leadership Forum, April 2020

Structural Engineering & Sustainability Georgia institute of Technology, April 2020

Carbon Cleanse: Reducing Carbon's Impact
Green Building United, Feb 2020

Core Materials: Better Concrete, Better Steel Applications in Practice Carbon Positive '20, Feb 2020

Embodied Carbon & Concrete
American Concrete Institute Georgia Chapter, January 2020

04 OUR EXPERTS

Our plans for the next year include 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) — Board of Directors
- CLF Los Angeles HUB — Founding Co-Chair
- CLF Atlanta 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
- USGBC Materials and Resources Technical Advisory Group
- USGBC Georgia Market Leadership Advisory Board
- AIA Committee on The Environment Georgia Steering Committee
- Lifecycle Building Center Advisory Board

EMBODIED CARBON REDUCTION CHAMPION



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

Dirk Kestner, a Principal and corporate Director of Sustainable Design at Walter P Moore will be our Embodied Carbon Reduction Champion. He is based in our Austin office 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, P.E., S.E., LEED AP BD+C is a Principal and leads WPM'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

Laura Karnath is a registered architect and a Senior Enclosure Technical Designer at Walter P Moore's Los Angeles office. She is a leader in computational design and holds broad global experience in the organizational models and technical challenges involved in the delivery of large international projects. Having overseen the delivery of highly complex building envelopes on four continents, Laura applies her knowledge and experience to using data to address embodied carbon in the built environment. An impassioned advocate for computationally driven building data management and for high performance facades, she believes both to be central in the ultimate decarbonization of the built environment. She is co-founder of the Los Angeles chapter of the Carbon Leadership Forum.

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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 700+ professionals work across 21 U.S. offices and five international locations.

