

EMBODIED CARBON ACTION PLAN

2024

MAGNUSSON
KLEMENCIC
ASSOCIATES

Structural + Civil Engineers

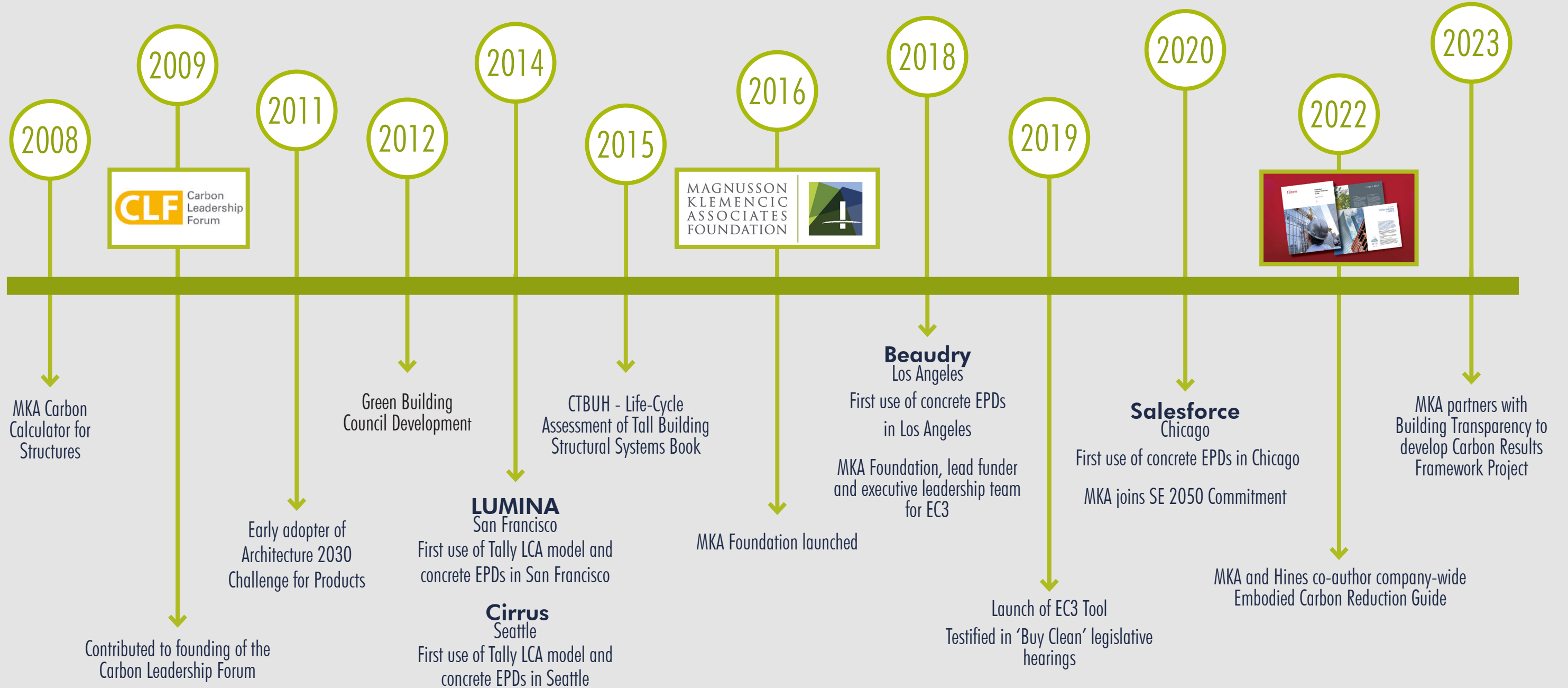
Seattle Chicago



CONSISTENT COMMITMENT

MKA has demonstrated leadership in embodied carbon reduction and sustainability dating back to some of the first carbon calculations for structures in 2008. We remain actively engaged by guiding the industry and making investments to accelerate the evolution of this topic and create the most significant carbon reduction on our projects.

MKA'S EMBODIED CARBON LEADERSHIP



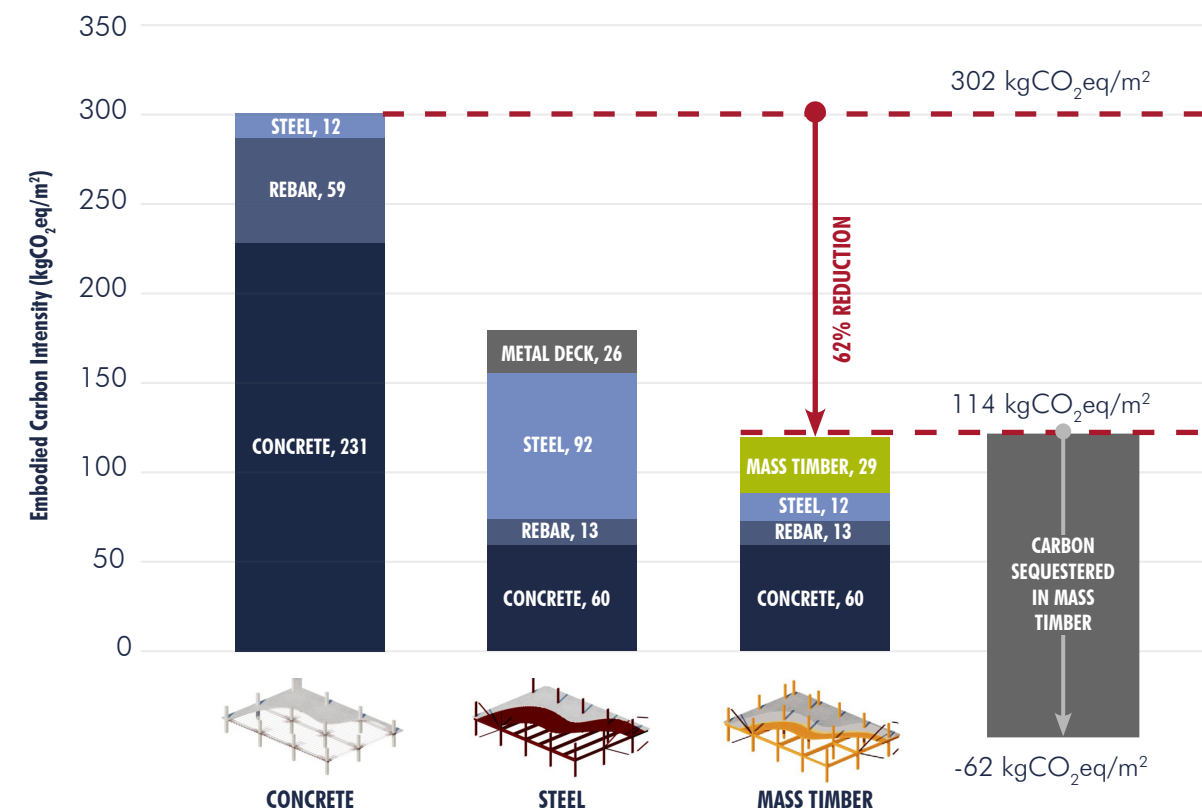
University of Washington Foster School of Business Founders Hall

Upon opening, the project was named the University's "greenest building," designed to achieve a **76% carbon emission reduction**, and use **70% less energy** and **53% less water** compared to typical facilities built with conventional methods.

EXPERT GUIDANCE

MKA's Sustainability Technical Specialist Team regularly performs structural life cycle analyses (LCA) to evaluate the embodied carbon impacts of structural system selection. This specialization and high-level understanding of LCA are key components of the early guidance we can provide our clients in order to discern the impact of embodied carbon in system selection. For example, the comparison below highlights the 62% embodied carbon reduction achieved for the University of Washington Foster School of Business Founders Hall project compared to traditional concrete or steel buildings. For this project, the savings were particularly impactful due to the lightweight mass timber superstructure, which allows further reductions of concrete and reinforcement in foundations and shear walls.

STRUCTURE EMBODIED CARBON (A1-A3 STAGES)



Using the latest advancements in LCA will continue to be a mainstay in our mission to provide clients with the most informed early guidance on design decisions impacting embodied carbon.

GLULAM BEAMS AND CONCRETE CORE USED IN THE CONSTRUCTION OF UNIVERSITY OF WASHINGTON FOSTER SCHOOL OF BUSINESS FOUNDERS HALL BUILDING



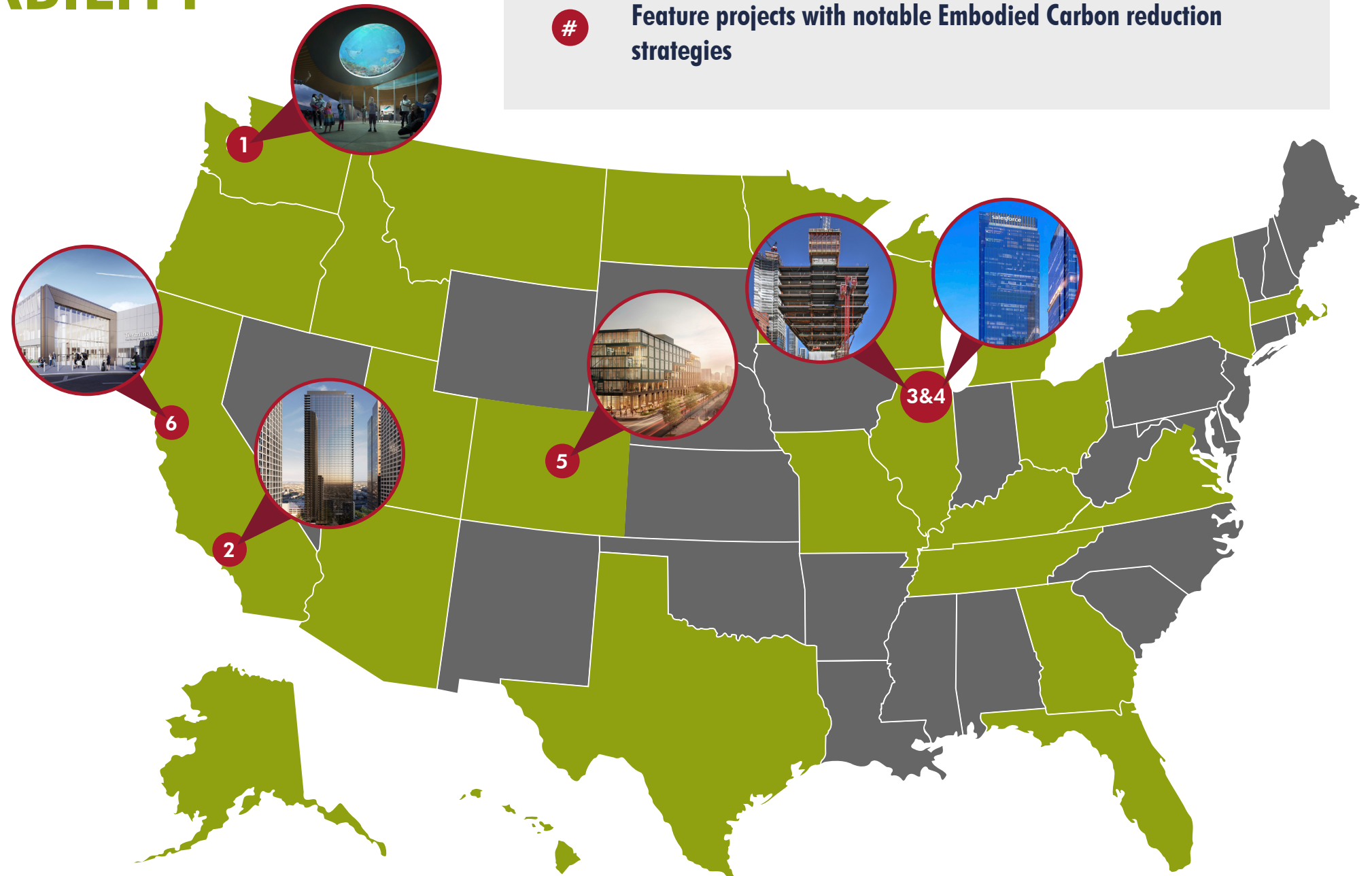
ADVANCING SUSTAINABILITY

Our team constantly advances sustainability using the latest materials and carbon reduction strategies. Within MKA's Sustainability Technical Specialist Team, we actively collaborate with material suppliers and innovative new technologies to be on the leading edge of low-carbon construction.

This includes the latest low-carbon concrete strategies like novel cements and cement reduction. For structural steel, this includes procurement strategies that prioritize steel from lower-carbon electric-arc furnace mills and utilizing higher-grade steel for overall tonnage and embodied carbon reduction. Our team has also been an advocate for use of mass timber as a lower-carbon structural system compared to concrete or structural steel, including more than 30 mass timber projects in the past 15 years.

Below are examples of effective carbon reduction strategies MKA has used on recent projects. MKA will continue to lead the industry in developing carbon reduction strategies for our projects moving forward.

- States where MKA has LEED-certified projects, including those that have leveraged the use of Embodied Carbon reduction
- # Feature projects with notable Embodied Carbon reduction strategies



**1 Seattle Aquarium Ocean Pavilion
Seattle, WA**

MKA led the structural design to achieve a 32% reduction in embodied carbon in the structure and envelope compared to traditional construction. Additionally, using low-carbon concrete resulted in a 38% reduction in embodied carbon compared to a typical concrete aquarium.

**2 Beaudry
Los Angeles, CA**

As the first major project in Los Angeles to use Environmental Product Declarations from concrete suppliers, the project team used the lowest embodied carbon concrete mixes available in the market. This resulted in a savings of 13,650 metric tons of verifiable equivalent carbon dioxide from entering the atmosphere at no additional cost to the owner.

**3 150 North Riverside
Chicago, IL**

The project used high-strength structural steel for columns and trusses, including the first use of Grade 70 steel in the United States. The overall savings of 510 tons of steel compared to typical steel grades resulted in a savings of 530 metric tons of equivalent carbon dioxide emissions.

**4 Salesforce Tower
Chicago, IL**

The project represents MKA and Hines' first project designed and constructed using the Embodied Carbon Reduction Guide, which allowed the tower to achieve a 27% reduction in concrete and a 9% reduction in steel compared to typical offices of the same scale.

**5 T3 RiNo
Denver, CO**

This innovative mass timber office building used less than half of the embodied carbon compared to a traditional concrete building. Additionally, the amount of timber fiber required to build the structure is regrown in North American forests in approximately 15 minutes.

**6 SFO Harvey Milk Terminal
San Francisco, CA**

This project was one of the first in the industry to utilize BluePlanet carbon-sequestering aggregate in concrete mixes. Additional strategies included procuring low-carbon construction materials, including steel and concrete, which resulted in an overall embodied carbon reduction of 20% compared to a typical terminal.



MANAGING POLICY SHIFTS

Changes surrounding embodied carbon are also occurring at the policy level. Local, state, and national policy developments are sure to impact many future developments. Because of MKA's recognized leadership and expertise in the industry, we are often asked to advise input on these policies.

MKA has been working with the City of Seattle on establishing appropriate embodied carbon limits for construction materials. At the state level, MKA is involved in California's new CALGreen requirements, the first mandatory state-level embodied carbon limits. At the national level, MKA participates in the National Science Foundation's Concrete Product Category Rule Committee that sets the new standards for developing concrete EPDs.

Participating in these larger conversations means we are aware of upcoming changes and have the expertise to help our clients navigate carbon policies to create the most beneficial projects.



MKA COLLABORATES ON EMBODIED CARBON IN POLICY AND BUILDING CODE

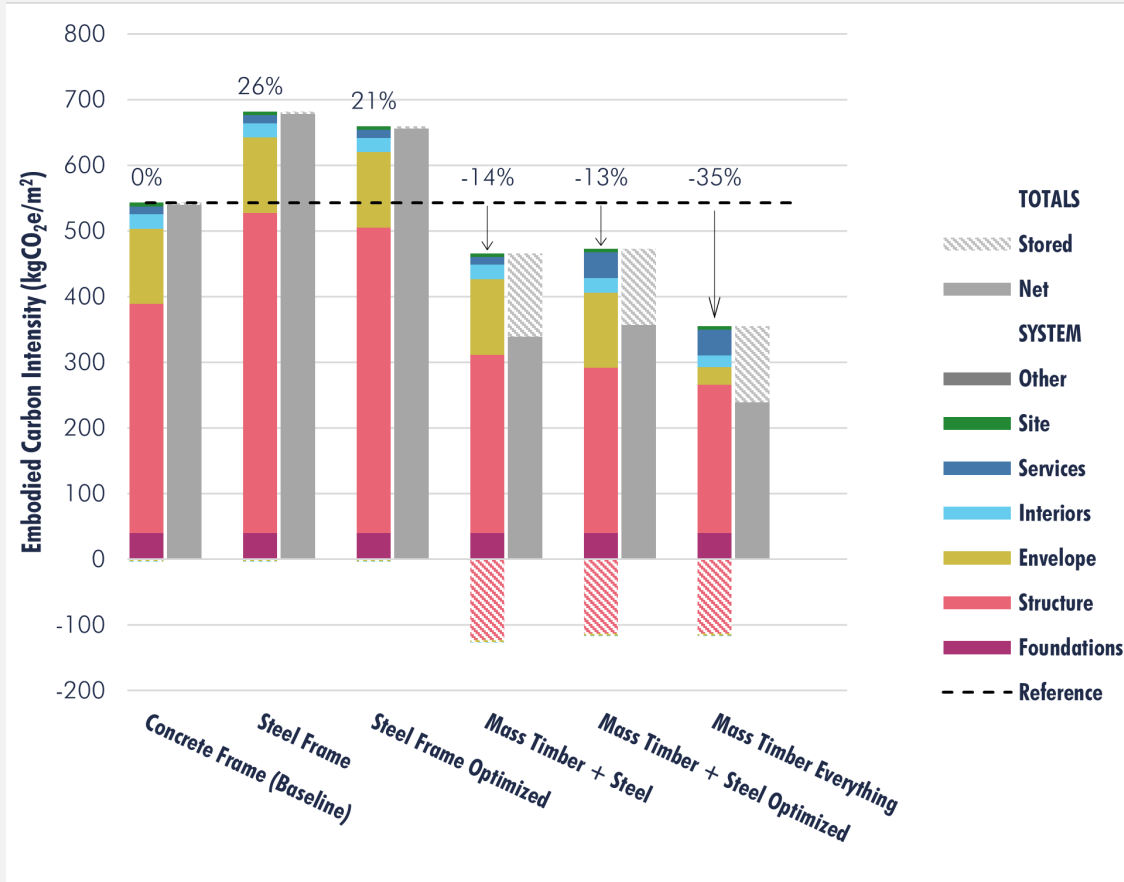
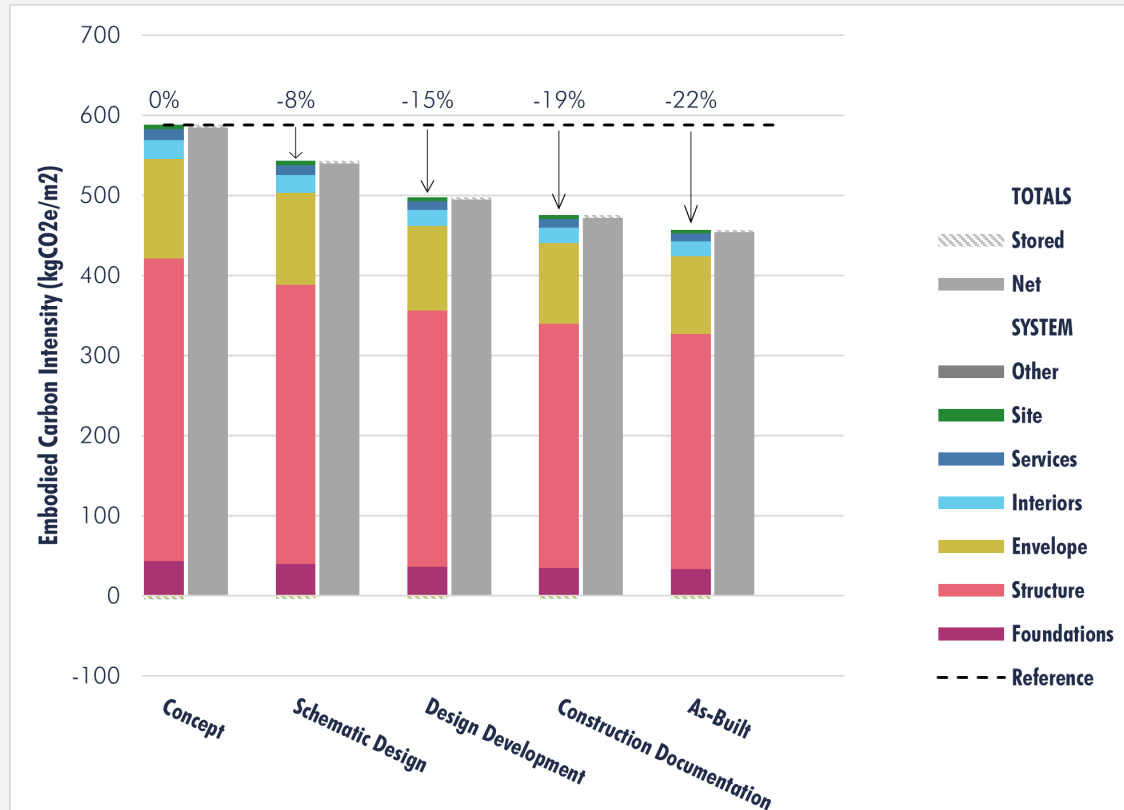


MKA's IAN MCFARLANE, PE, SE, PARTICIPATING IN A PANEL DISCUSSION ON LOW-CARBON CONCRETE



MKA's JULIETTE PEYROUX, PE, SE, PRESENTS "RAISING THE BAR BY LOWERING THE CARBON" DURING THE AIRPORT CONSULTANTS COUNCIL, PLANNING DESIGN & CONSTRUCTION SYMPOSIUM IN ANAHEIM, CA

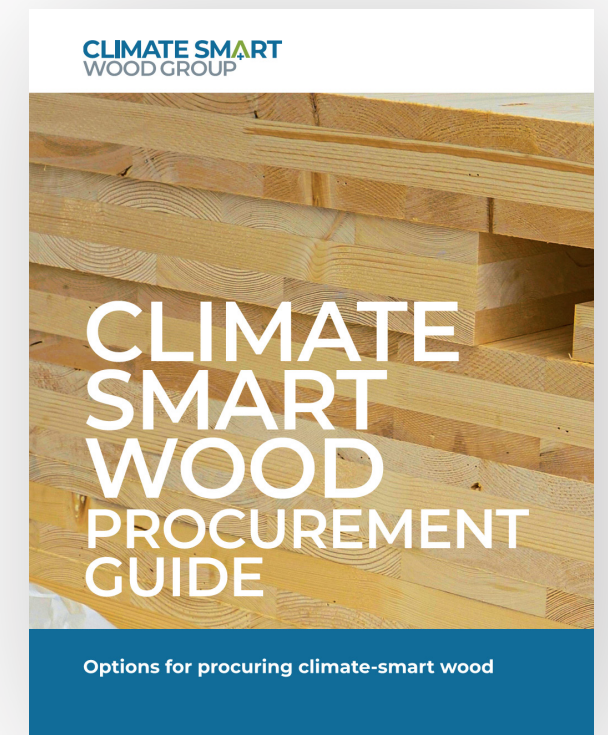
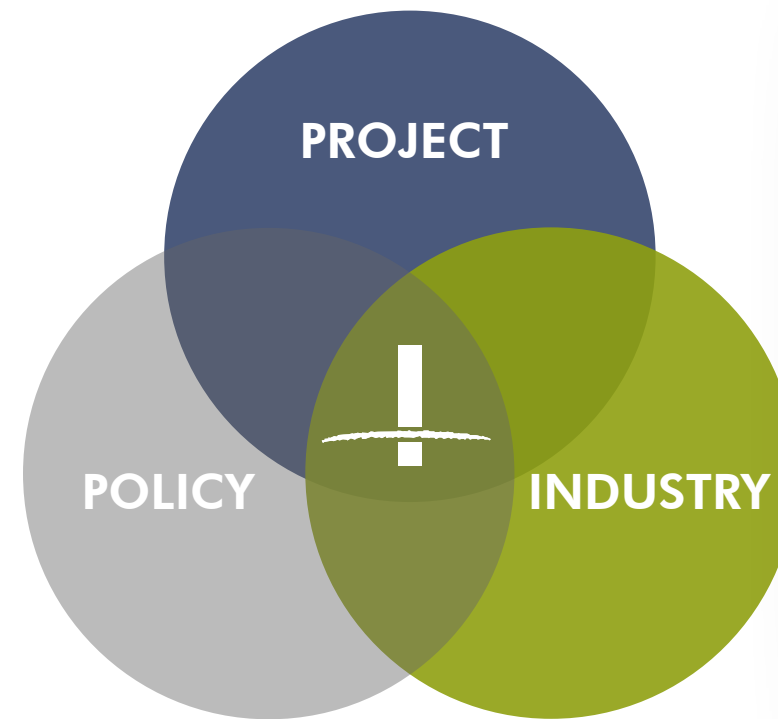
MKA AND BUILDING TRANSPARENCY CARBON RESULTS FRAMEWORK EXAMPLE

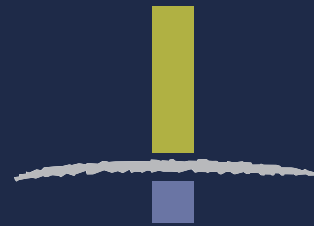


INDUSTRY IMPACT

Our dedication to reducing embodied carbon extends beyond project work as we seek to create impact and change at the industry level. An example is MKA's project with Building Transparency, where we are creating a guiding document on industry best practices for communicating project emissions and reduction strategies. MKA also contributed to the Climate Smart Wood Group's guide to wood procurement, which is setting the industry standards for sustainable timber construction. By standardizing carbon accounting, we can better understand industry metrics and analyze data for future carbon savings opportunities.

MKA will continue our mission to reduce embodied carbon in the built environment. Our approach involves creating reduction opportunities in our projects, providing guidance for evolving policies, and striving for meaningful industry-wide changes.





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