

# EMBODIED CARBON 2026 ACTION PLAN

# INTRODUCTION

**KL&A's corporate vision is "We Make a Difference".** As engineers and builders, we occupy a pivotal role in addressing climate change. The construction industry contributes nearly 40% of total U.S. anthropogenic carbon emissions, with a significant portion arising from embodied carbon in building materials and processes. While individual actions matter, our professional decisions have the potential to drive far more substantial reductions in greenhouse gas emissions at a global scale.

Our influence extends from the materials we select to the systems we design. Through integrated engineering and material expertise, KL&A guides project teams toward efficient structural systems, low-carbon material selections, and reuse opportunities. Our life cycle assessments, low-carbon concrete strategies, mass timber design, and salvage and reuse planning all support measurable improvements in global warming potential. KL&A's early-stage focus on embodied carbon enables meaningful reductions before operational energy ever enters the conversation. This approach has influenced codes, standards, and expectations across the profession.



*Photo Credit: Brandon Huttenlocher*

# DESIGN PROFESSIONALS HAVE THE POWER TO REDUCE EMISSIONS AT A SCALE HUNDREDS OF TIMES GREATER THAN INDIVIDUAL ACTIONS ALONE

The graphic below illustrates the point: design professionals have the power to reduce emissions at a scale hundreds of times greater than individual actions alone. In 2025, KL&A's 140+ employees designed or built 970 projects, underscoring the immense potential for impact. This is the purpose behind **Team Carbon** and a key reason why KL&A is a proud signatory of the SE2050 Commitment. As an early signatory, KL&A contributes life cycle assessments to the SE2050 database and publishes an annual Embodied Carbon Action Plan, reflecting a long-standing commitment to transparency and continuous improvement.



# TEAM CARBON



## ROBBIE CAMANN, PE

EMBODIED CARBON  
OPERATIONS LEAD

Principal and Senior Project Manager with 20 years of experience. Provides vision and leadership for the holistic integration of embodied carbon expertise across all KL&A operations. He actively shapes the broader industry conversation through ACEC Colorado, the SEAC Sustainable Design Committee, the Colorado Mass Timber Coalition, and direct engagement with the City of Denver's Planning and Development and Office of Climate Action, Sustainability, and Resiliency.



## BRENT KEHOE, SE

EMBODIED CARBON SPECIALIST

Chair of KL&A's Concrete Materials Committee. Member of national ACI, active in local chapter of ACI. Active member of the Structural Engineers Association of Colorado Sustainable Design Committee.



## GREG KINGSLEY, PHD, PE

KL&A DIRECTOR OF  
RESEARCH & DEVELOPMENT

Founder and President Emeritus of KL&A; recognized authority on innovative structures, with a focus on mass timber construction and novel structural solutions. Advocate for mass timber as a means to combine carbon sequestration with environmental responsibility.



## JILL PORRETTA, PE

EMBODIED CARBON SPECIALIST

Developer of KL&A's in-house Revit plug-in for graphical GWP quantification. Active in Rocky Mountain ACI and KL&A's Concrete Committee.



## RACHAEL DOBOSIEWICZ, PE

EMBODIED CARBON SPECIALIST

SE2050 Embodied Carbon Champion and member of the SE2050 Program Mechanics Group. LCA practitioner and internal database developer. Leader of internal integration efforts.



## JUDSON DIEBEL

EMBODIED CARBON SPECIALIST

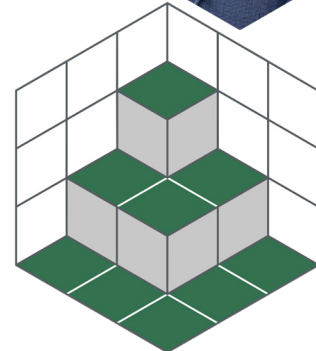
Focuses on existing structures and adaptive reuse, developing tools and standards to aid with internal workflows. Manages internal embodied carbon resources for KL&A employees.



## ANLI NI, PE

EMBODIED CARBON SPECIALIST

Focuses on local and national policy, including Buy Clean Colorado (BCCO). Leads efforts to promote circular economy practices within KL&A work and the broader industry.



**KL&A**

teamcarbon@klaa.com



Full Circle San Antonio



USGBC Greenbuild

KL&A 2026 Embodied Carbon Action Plan

# EDUCATION

- ✓ There is a healthy appetite for embodied carbon reduction and sustainability within KL&A outside of Team Carbon. Part of Team Carbon's 2026 and 2027 focus is to engage those individuals in a Carbon Collaborator role. The role will seek to encourage conversations and help individuals track GWP on their projects. The role will be available to anyone who wants to participate and will facilitate better communication between Team Carbon and the rest of KL&A and encourage a wider range of engineers to strategize ways to reduce embodied carbon, regardless of whether the project has sustainability goals or not.
- ✓ In 2025, KL&A made 26 carbon focused presentations to architectural clients, industry groups, and trade groups. Of those, 18 were in person presentations, and the remaining 8 were webinars.
  - In addition to continuing with the successful Employee On-boarding Team Carbon introductory session, KL&A has also conducted multiple internal presentations on various topics. Presentation focuses include master specifications, local Denver policies and applications, and a concrete foundation study.
  - KL&A continues to present and participate on panels at local and national conferences such as USGBC Greenbuild, Full Circle San Antonio, Colorado Real Estate Journal, and SEI Structural Engineering Sustainability Symposium.
  - In 2026 and 2027, Team Carbon aims to work with our internal Construction Management Group to integrate Buy Clean Colorado (BCCO) tracking into their tools for both steel and mass timber, thereby supporting the tax exemption process.
  - In 2026 and 2027, Team Carbon is working on creating an internal, easily accessible Digital Embodied Carbon guide that will include information on embodied carbon and sustainability. The Guide will cover everything from embodied carbon basics to material deep dives, local policy information, links to publications and external tools, and even tips on how to engage various stakeholders in conversations surrounding embodied carbon.

# EDUCATION

Members of KL&A's Team Carbon are actively engaged in:

- Carbon Leadership Forum (CLF) Rocky Mountain Hub
- ASCE SEI Sustainability Committee
- ASCE SEI Circular Economy Working Group
- Structural Engineers Association of Colorado (SEAC) Sustainability Committee
- SE2050 Committee
- ACEC Colorado - Government Affairs Steering Committee and Vertical Design & Private-Public Markets Forum
- Rocky Mountain ACI
- Colorado Mass Timber Coalition
- US Green Building Council
- Educating and participating in state and local climate change legislation

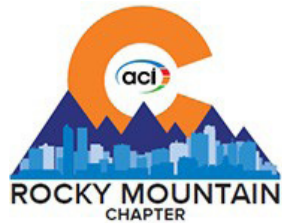












Photo Credit: KL&A

# REPORTING

- ✓ In 2025, KL&A’s Team Carbon submitted 5 Structural LCAs to the SE2050 database and will continue to do so in 2026 and beyond.
- In early 2026, Woodworks and KL&A published a follow up to the Comparative Case Study Series, focusing on trends. Some key trends highlighted in the report include:
  - The average GWP savings across all four building studies was 88 kgCO<sub>2</sub>eq/m<sup>2</sup>.
  - When isolating the mass timber and alternate structural systems (i.e. superstructure) for comparison, the GWP savings are even larger. This highlights the unique opportunity of superstructure system selection to reduce building GWP.
  - All four mass timber buildings realized faster construction for the mass timber buildings, with an average schedule savings of 16%.
- In 2026, the Boulder Community Hospital Summary of Deconstruction, Stockpile, and Reuse paper will be published and distributed.
  - The salvaged steel pieces were used in a total of 21 projects across Colorado. Of these projects, 16 reused the steel in structural applications and 5 reused the steel in a non-structural application.
  - Reuse of the steel resulted in a total GWP savings of 167,338 kgCO<sub>2</sub>eq across all projects.
  - KL&A plans to take it one step further and complete an LCA on Fire Station 3, analyzing the impact of salvaged steel on the project’s overall GWP.

Study Building	Alternative System	Mass Timber System – Equivalent Savings*
Return to Form**	Steel	 165  137
	Concrete	 207  171
Nez Perce-Clearwater	Steel	 48  40
Burwell Center	Steel	 51  42
Denver Office	Steel	 217  180

 = 10 homes       = 10 cars

Mass Timber Comparative Life Cycle Assessment Series - Trends and Conclusions

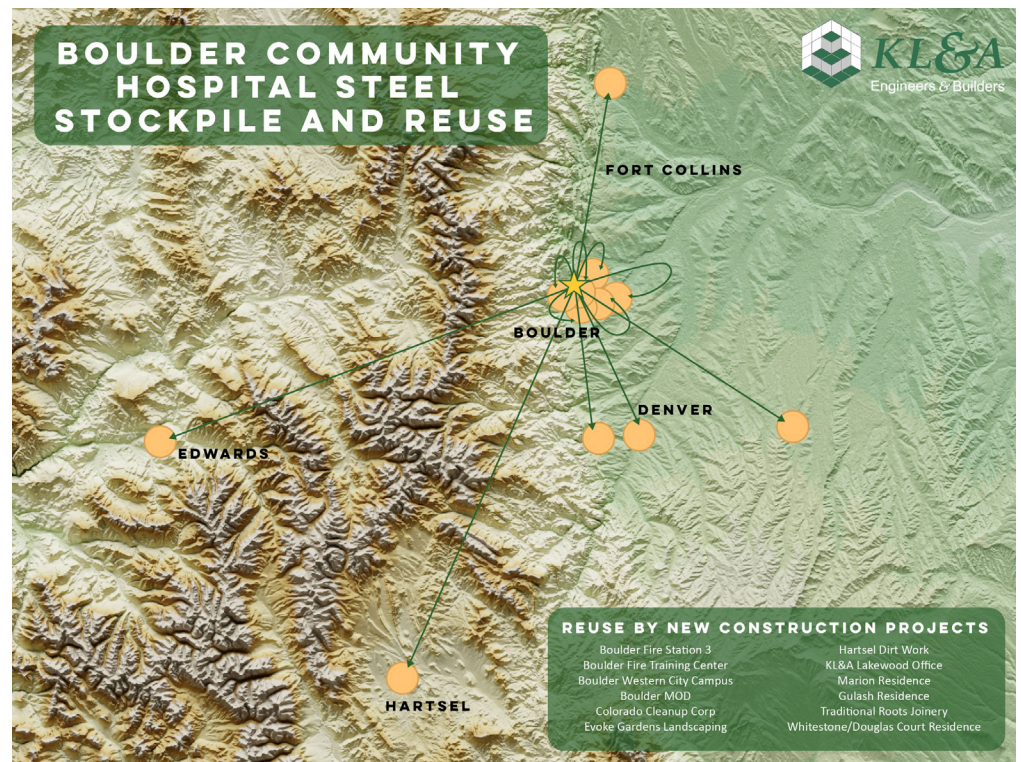


Photo Credit: KL&A

# REPORTING

- KL&A is currently working with an international team of academics and practitioners to advance AI based tools in support of advanced, real time logistics management to connect deconstructed steel to new projects.
- KL&A has two projects, Ball Arena and 1301 S Pearl, participating in the inaugural Denver Embodied Carbon Pilot Program. Through the program, the City of Denver will provide funding for completing various deliverables at SD, CD and As-Built phases of the project.
  - Projects must demonstrate material intensity reductions through the submission of EPDs and meet a project embodied carbon intensity limit as quantified through LCAs at the CD and as-built phases.
  - The Pilot Program aims to understand and collect regional information regarding embodied carbon to help inform future reduction goals and limits within Denver. Best practices and lessons learned will be compiled and shared.



# REDUCTION

- ✓ Since committing to SE2050 in 2020, KL&A's Team Carbon has refined GWP quantification, documentation, and data tracking. Until industry-wide building benchmarks are clearer, we remain focused on reducing embodied carbon in each project while setting ambitious, data-driven goals.
- 205 S Garrison
  - Having outgrown our office in Golden, CO, in 2025 KL&A opened a new additional office in Lakewood, CO. KL&A weighed various options but ultimately decided to renovate an existing building, recognizing the reduced embodied carbon impact as compared to building new.
  - In 2026, Team Carbon plans to complete a case study to determine how much embodied carbon was saved by choosing to reuse an existing building.
- Embodied Carbon Specification and General Notes Rollout
  - KL&A updated Master Specification in 2025 along with Revit template General Notes
  - Provided opportunity to impact all KL&A projects moving forward through a (3) tiered approach:
    - Tier 1: Minimum embodied carbon language included in all KL&A projects, primarily covering EPD collection requirements.
    - Tier 2: Language defining GWP limits and compliance requirements. KL&A's standard is to include GWP limits on all projects in an effort to reduce embodied carbon; default limits are not considered aggressive. PIC and PM discretion to opt out.
    - Tier 3: Additional language for projects setting GWP reduction targets, such as a 30% reduction from baseline.
  - In 2026 and 2027, Team Carbon will work to train all engineers in how to review EPD submissions congruent with the new master specifications.





# REDUCTION

- Data Center
  - KL&A worked with a concrete supplier to establish a weighted average embodied carbon budget for all concrete on a new data center. By working with the concrete supplier and optimizing mix designs, KL&A helped to reduce the concrete GWP by 15% as compared to NRMCA regional baselines.
- EPD Creation
  - KL&A continues to work with local suppliers to create EPDs, recognizing this as a crucial first step toward innovation at the A1-A3 stages. Currently, the focus is mainly on regional concrete suppliers, but KL&A is also pushing for EPDs of other low-carbon materials.
- Widespread Internal Integration
  - Through the Carbon Collaborator Program, the goal is to start reducing embodied carbon on more projects without explicit embodied carbon goals and without a full LCA. Getting engineers to incorporate embodied carbon reduction strategies naturally into workflows is a big focus area of Team Carbon for 2026 and 2027.
  - KL&A believes that regardless of client interest there are ways to reduce embodied carbon on all projects and through the program, Team Carbon hopes to empower individuals to recognize and implement those strategies.
- Local Materials
  - KL&A is active in advancing the use of small diameter local timber from fire mitigation treatments in mass timber products used in local buildings. We are working with Colorado mills and manufacturers to introduce Colorado fiber into the supply chain and at the same time, seeking opportunities to use this timber in local building projects.

Photo Credit: KL&A

# ADVOCACY

- ✓ KL&A advocates for a proactive approach to embodied carbon, recognizing that reducing GWP is more than just conducting LCAs – it’s about integrating carbon-conscious decision-making and design from the start. As signatories of SE2050, we help clients understand and quantify the value of early engagement, ensuring that carbon impacts are considered alongside cost, performance, and constructability. As structural engineers, we serve as trusted consultants across diverse project types and scales, collaborating with design teams to implement practical, high-impact strategies for reducing embodied carbon.
- ✓ KL&A’s website, LinkedIn, and social media platforms help educate clients, students, potential design partners, and the broader community about our SE2050 commitment, as well as our continued efforts in speaking, publishing, and designing sustainable buildings.
- Team Carbon is creating a circular construction and salvaged material reuse presentation to educate developers and jurisdictions as well as engineers and contractors.
  - Ideally will begin to build a network of partners in circular construction.
  - Talked with various student groups, stakeholders, and industry groups about barriers to steel reuse.
- Greg and Anli are active in the Colorado Mass Timber Coalition policy subcommittee where they are working on the development of CO mass timber industries using CO sourced timber.
- USDA/USFS Wood Innovation Grant
  - Local timber pathways: Developing simple, affordable methods to use Colorado-harvested lumber in NLT mass timber panels, leveraging minimal manufacturing requirements and existing code compliance.
  - Structural research: KL&A is conducting analytical and experimental studies to validate the species, grades, and sizes that Colorado mills can produce.
  - Design inversion: Rather than fitting materials to a design, the project identifies architectural applications that align with the constraints of locally available timber.
  - Forest health co-benefit: The targeted lumber comes from forests in need of treatment to reduce wildfire risk, connecting the work to broader environmental outcomes.
- KL&A continues to partner with local parties on policies and reduction programs
  - Continue to educate OSA on the importance of mass timber for current policies and how to incorporate it
  - City of Aspen
  - City of Denver Climate Action, Sustainability and Resiliency
  - Colorado Circular Communities Enterprise

**“WE ARE  
ADVANCING  
COLORADO-  
SOURCED MASS  
TIMBER BECAUSE  
THE CARBON  
IMPACT DOESN’T  
STOP AT THE  
BUILDING: IT  
RIPPLES OUT  
INTO LARGER  
ECOSYSTEMS  
ALL THE WAY TO  
FIRE-RESILIENT  
FORESTS.”**

**GREG KINGSLEY, PHD, PE**

# LESSONS LEARNED

- At this moment in time, there is less demand in the industry for innovative materials and efficient design than we had hoped to see. We have learned to shift our perspectives and conversations to appeal to cost savings and health benefits. People are generally more receptive to implementing reduction strategies when framed in these contexts rather than through the lens of embodied carbon and sustainability.
- Similarly, we have adjusted our expectations and now focus on getting concrete suppliers to create EPDs, meeting them where they currently are, before we begin to push them to adopt more aggressive reduction approaches.
- Our priorities are constantly shifting as new opportunities arise, but we need to prioritize conducting LCAs in the future, even if we are not paid for them. LCAs and GWP estimates are most useful in the early stages of a project, and we hope to get involved in a larger number of projects at these early stages so that we can have the greatest opportunity for impact, regardless of client interest. Traditionally, we have done client contracted LCAs and used the results to help inform holistic project decisions but even if a client does not contract us to do an LCA, it is still beneficial to do one to help inform internal decisions.
- It is encouraging to have a team of individuals that are passionate and dedicated to working on embodied carbon reduction but if we plan to succeed in the 2050 challenge, we need widespread internal integration. Our team of seven specialists are great, but we want to push both KL&A and the industry to see that embodied carbon work to some extent should be a normal responsibility for an engineer and not exclusive to specialists. Which means creating easy access to resources, engaging in proactive guidance, and continuing educational outreach.



Photo Credit: Anderson Mason Dale Architects

KL&A 2026 Embodied Carbon Action Plan



Photo Credit: Katie Harris

# WE MAKE A DIFFERENCE

We are a firm built around the idea that structural engineers should return to a master builder role by taking ownership of structural systems. A collaborative approach and project-centric behaviors are our differentiators, facilitating a more engaging design and construction process. Our philosophy of personal responsibility has generated a corporate culture of problem solving and innovation. We are engineers first and foremost, which we leverage on our steel detailing and steel construction projects. Our sustainability leadership, from Life Cycle Assessments to low-carbon material strategies like mass timber, reflects that same ethos: owning the problem, driving the solution, and making a difference at every scale. KL&A is shaping a more integrated, informed, and responsible future for structural engineering.



**KL&A**  
Engineers & Builders

