

SE2050

EMBODIED CARBON ACTION PLAN 2026



DMACC Urban Campus Student Center | Des Moines, IA

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Introduction

Hampstead Woods Senior Living | Iowa City, IA

ABOUT SHIVE-HATTERY

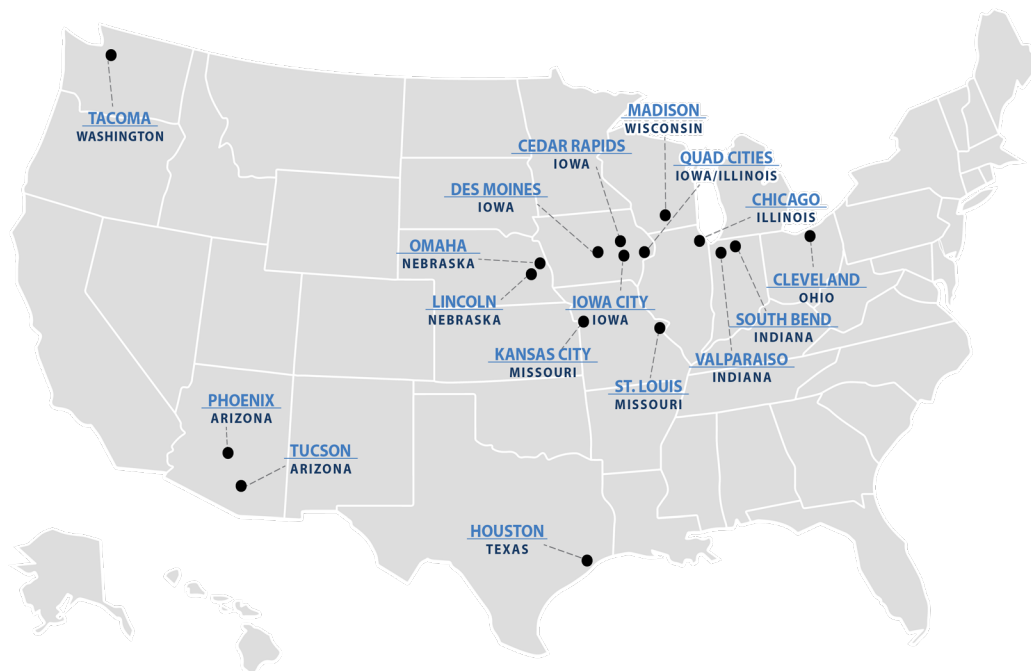
Established in Cedar Rapids, Iowa, in 1895, Shive-Hattery has evolved from a civil engineering and surveying firm into a full-service architectural and engineering company. With over 680 professionals and 17 offices nationwide, we serve commercial, education, government, healthcare, and industrial markets.

At Shive-Hattery, we prioritize our clients' needs, goals, and concerns. Our guiding principle, "**We design what matters to make our world a better place**," informs every aspect of our work, from project execution to community engagement. By deeply understanding our clients' businesses, we provide tailored solutions that exceed expectations.

ABOUT OUR COMMITMENT

As we enter our second year as a signatory for SE2050, Shive-Hattery has continued to be committed to the SE2050 Challenge. Our company has learned much from its inaugural signing in March of 2025. The Sustainable Structural Engineering group has been able to provide guidance and be a reliable source information regarding all things sustainable design. This group has proven that there are measurable steps that we as a company can accomplish to help with our role of reducing embodied carbon and Global Warming Potential in the industry. As shown in this year's Embodied Carbon Action Plan (ECAP) there are numerous things that Shive-Hattery has already begun to incorporate with our clients and employees to show that sustainable design is a core value that we believe in.

OUR OFFICES





SE2050 Committee Mission Statement

We are committed to reducing our environmental impact, we believe in transparency and accountability, and we want to share our efforts in pursuit of the goals of the SE2050 program.

We hope to inspire others to join us in our efforts to create a more sustainable and equitable future for all. Together, we can create a more inclusive and green future for ourselves and for generations to come.

OUR GOAL

To educate and advocate the need to reduce the carbon footprint of the built environment to net zero by 2050. This position we find ourselves in as engineers necessitates responsibility. If we, as professionals, design with the environment in mind, we can make incremental strides toward reducing major greenhouse gas emissions, limiting the global warming issue at hand.

OUR CHALLENGE

The SE2050 Challenge states: *"All structural engineers shall understand, reduce, and ultimately achieve net zero embodied carbon across their projects by 2050."* As a signatory, we take this challenge to heart. Our goal is to train current and new employees in ways to implement sustainable practices.



As stewards of the design process shaping the built environment, architects and engineers have the opportunity—and a moral responsibility—to reduce or reverse its negative impacts wherever possible.

Our Embodied Carbon Reduction Champion



COREY GREENSTEIN, PE
CHICAGO, ILLINOIS

Corey's passion for building and structural design began in hurricane-prone South Florida, where he developed an early fascination with how extreme weather impacts construction. Initially driven by a dream to design roller coasters, Corey earned his bachelor's degree in civil engineering with a focus on structures from Bradley University in 2013. Since joining Shive-Hattery's Chicago office in 2020, Corey has applied his expertise in precast concrete sandwich wall panels and post-frame buildings to a variety of projects. He's not only a detail-oriented structural engineer but also a passionate advocate for biophilic design. His enthusiasm for sustainability is reflected in his active role on Shive-Hattery's Sustainability Practices + Processes committee. Corey's positive attitude and strong communication skills make him a valuable asset to every team he joins.

A NOTE FROM OUR EMBODIED CARBON REDUCTION CHAMPION

As Shive-Hattery enters its second year as a signatory of the SE2050 challenge, our group has learned so much to help get sustainability to the forefront of people's mind during design and construction. This ECAP is proof of how much work each member of this group has done to help Shive-Hattery make progress to achieving our goals, both long and short term. I personally want to thank each member of the Sustainable Structural Engineering (SSE) group for all the hard work they have put in to make this year's ECAP a success.

I believe that the group has made progress in making a difference inside Shive-Hattery by informing their coworkers how each person can make a difference to make this planet a better place. Whether it's discussing the update to our specifications or helping present to clients regarding which materials will give the greatest reduction in embodied carbon, our group has become the go-to source for all sustainability in the structural engineering discipline at Shive-Hattery.

I understand that there is still a long way to go, but just seeing the progress made in 2025 has motivated me to keep it going and to help Shive-Hattery achieve our guiding principle: "Design What Matters to Make Our World a Better Place."



Howard Commons | Howard, WI

Our SE2050 Committee Members



JOE MCELHINEY, PE
BETTENDORF, IOWA

Joe is a dedicated professional at Shive-Hattery, working as a structural engineer, project manager, and engineering manager. He's committed to promoting sustainable design, encouraging his teams to integrate it into their work. Joe graduated in 2015 from the University of Wisconsin – Platteville with a bachelor's degree in civil engineering, focusing on structures and geotechnical engineering. His upbringing in rural Iowa sparked a deep interest in the environment, driving his personal and professional efforts to reduce environmental impact and conserve natural resources. At Shive-Hattery, Joe excels at incorporating sustainability into heavy industry projects while meeting clients' unique needs and expectations, ensuring designs are both innovative and resilient.

Joe is also an active member of the company's sustainability initiative, contributing to the Practices and Processes committee, where he collaborates with colleagues to enhance sustainable design practices and promote continuous improvement across the organization.



BRE JENSEN
IOWA CITY, IOWA

Bre joined Shive-Hattery in 2018 as an architectural intern while working on her structural master's degree. Once graduated, she transitioned from the architectural team into a structural role as an engineer. Throughout her time at Shive-Hattery, Bre has worked on a variety of projects ranging from industrial to healthcare/higher education to commercial with materials ranging from concrete to steel to wood. She has found her niche in the multi-family commercial realm where she is able to utilize both her architectural and structural backgrounds. Bre is excited to work alongside her fellow structural engineers in sustainability to provide Shive-Hattery with the knowledge base and tools to help reduce our carbon footprint and be more cognizant of the effects our structures have on our environments.



CHRIS FOJTIK
CHICAGO, ILLINOIS

Chris, born and raised near Chicago, has always appreciated both the natural world and the urban landscape. Now, he's focused on bridging the gap between reducing environmental harm and designing efficient structures. He earned his bachelor's degree in civil engineering, specializing in structures and mechanics of materials, from the University of Iowa in 2019. Chris began his career in industrial engineering, where he first encountered sustainable design in the biofuel industry, collaborating with clients to optimize processes and design structural supports with sustainably sourced steel. Since joining Shive-Hattery in early 2023, Chris has been eager to work alongside other structural engineers, continuing to promote sustainable design and contributing to the goal of achieving net zero emissions in structures by 2050.



MARENA LODZINSKI
CHICAGO, ILLINOIS

Knowing the importance of catching people's eyes in order to get your message across, Marena has been using her graphic design skills to assist Shive-Hattery's Sustainability Committee. Since joining the Chicago office in 2017, she has strived to not only improve our designs but to integrate accessible and sustainable practices into the graphic design process.

Sustainability Champions Across Shive-Hattery

We recognize the significant impact the design and construction industry has on the environment, with buildings and infrastructure accounting for a large portion of embodied carbon and greenhouse gas emissions. Embracing our role, we are committed to designing sustainable, environmentally-friendly structures that improve quality of life while contributing to a greener future.

As a full-service firm, Shive-Hattery has champions across disciplines dedicated to reducing embodied carbon and minimizing project carbon footprints. They lead efforts to optimize material usage, promote sustainable design, and implement low-carbon solutions, ensuring our projects exceed industry sustainability goals.

In our second year, we aim to continue to inspire others to join us in creating a more sustainable and equitable future.



Woven throughout Shive-Hattery's guiding principle, purpose, and values is the sense of integrity. It unites all of our 680+ employees and drives a sense of service and accountability to ourselves, each other, clients, partners, neighbors, and communities.



Our SE2050 journey is rooted in education, transparency, and continuous improvement. By building our collective knowledge and sharing what we learn, we empower our teams to make informed, responsible design decisions. This commitment helps us support our clients while advancing a future we can all stand behind.

**-Jennifer Bennett, SE, PE
President + CEO of Shive-Hattery**



Education Plan

Valparaiso Boys and Girls Club | Valparaiso, IN

Our Approach

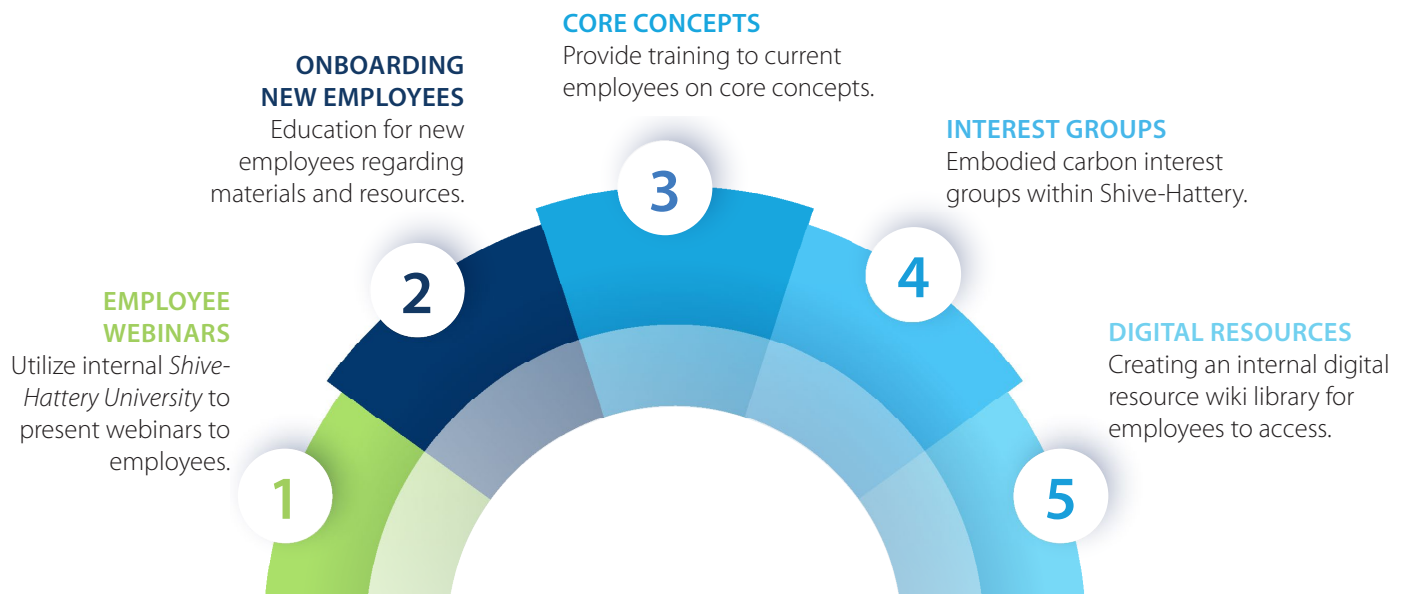
Shive-Hattery initiated an all-discipline sustainability group in 2022, underscoring our commitment to building a more sustainable future across all areas of our work. Now, we're taking a focused step forward by emphasizing sustainability within structural engineering across the company. Our Embodied Carbon Reduction Champion, Corey Greenstein, in collaboration with the SE2050 group, is leading this important initiative. Together, we are working to educate our structural engineers on how our designs impact the environment, with a specific focus on reducing embodied carbon.

Shive-Hattery's structural engineers are strategically located across our offices, servicing all market sectors, allowing us to integrate sustainable practices throughout various regions. The SE2050 group is committed to ensuring that our engineers are not only aware of our sustainability goals but are also equipped with the

practical tools and knowledge necessary to achieve them.

To facilitate company-wide buy-in, the group has planned visits to each office to foster face-to-face engagement and deeper collaboration.

During these meetings, we have shared our ambitious goals for the SE2050 initiative, offered insights into the innovative tools and strategies we have developed, and provided hands-on training to enhance our collective expertise. **By empowering our structural engineers with this knowledge, we are not only supporting their professional growth but also reinforcing our commitment to sustainable design.** This initiative is a crucial part of our broader strategy to integrate sustainability into every aspect of our work, ensuring that we contribute positively to the communities and environments we serve.



SE2050 ACADEMY EMPLOYEE WEBINAR SERIES

Shive-Hattery provides employees with many resources internally and externally for knowledge sharing. We will continue to provide those opportunities while also specifically providing webinars or individuals to come talk to our groups about sustainability in the structural realm.

ONBOARDING PROCESS

Shive-Hattery has been utilizing programs for Life Cycle Analysis (LCA). While training new employees, we have started incorporating LCA into their program training.

TRAINING OF EXISTING EMPLOYEES

Existing employees of Shive-Hattery will be provided the information and knowledge base to be able to measure, reduce, and report embodied carbon using technology integrated into our everyday systems.

OUR INTERNAL STRUCTURAL SUSTAINABILITY GROUP

The Shive-Hattery sustainability group includes all disciplines across the company. A specific focus group on embodied carbon has been integrated and made available for all to join.

SE2050 RESOURCE PAGE

Shive-Hattery has created a Sustainable Structural Engineering (SSE) page that lives on our internal website. This resource page is updated with links to those who are on the current SSE team, goals for our SE2050 plan, as well as information and resource links for presentations or webinars that are topics we find to meet our criteria.

RUNNING LCA FOR LEED AND MATERIAL COMPARISONS



Healthcare Foundation of La Porte | La Porte, IN



Reduction Strategy

City of Hills Public Use Bandshell | Hills, IA

Our Goals

At Shive-Hattery, we work on projects across various sectors, from schools and hospitals to industrial facilities.

When it comes to reducing embodied carbon, every project has the potential to benefit from one or more reduction strategies. Whether implementing immediate solutions or developing long-term goals, our commitment is to minimize embodied carbon in every project possible with the ultimate goal of achieving net-zero emissions by 2050.

HOLISTIC APPROACH ACROSS ALL PROJECT TYPES

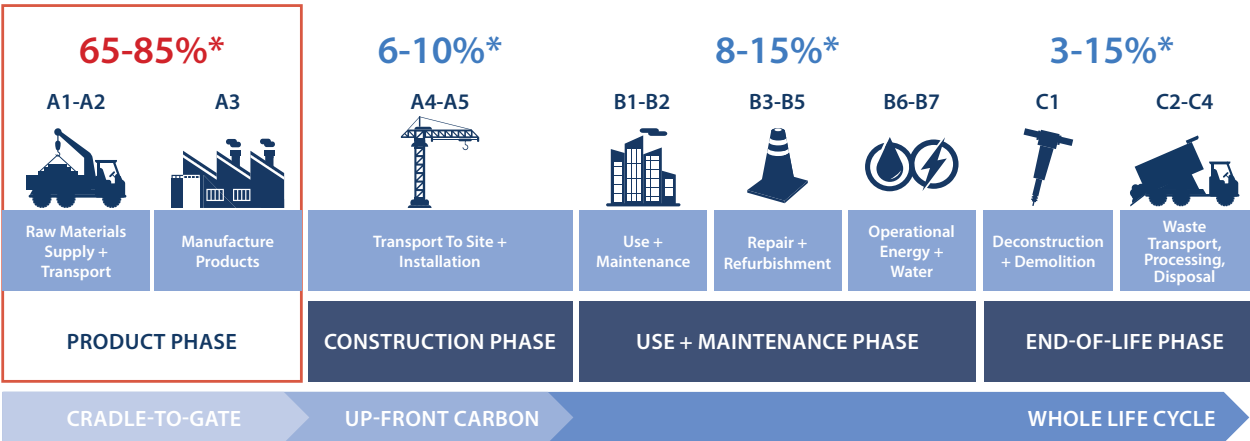
We recognize that each project presents unique challenges and opportunities when it comes to reducing embodied carbon. Our approach is not one-size-fits-all; instead, we tailor our carbon reduction strategies to align with the specific needs, functions, and goals of each

project. By understanding the distinct characteristics of each project, we can optimize our design and material choices to achieve the most significant carbon reductions.

STRATEGIES

- MATERIAL SELECTION** - Provide different material options with embodied carbon as a consideration for each case. Include recycled and biogenic materials whenever possible.
- PERFORMANCE TRACKING** - Create internal metrics and goals for our company to strive toward per project discipline (i.e. commercial, industrial, etc.)
- TAILORED STRATEGIES** - Work with the client on each individual project to provide unique building reductions and project specific opportunities.

PERCENT OF TOTAL EMBODIED CARBON EMISSIONS WITHIN THE CONSTRUCTION LIFE CYCLE



* Percent of total embodied carbon emissions Source: Rocky Mountain Institute (RMI), "Embodied Carbon 101: Building Materials" March 2023, <https://tinyurl.com/ybpfvxv64>

SHORT-TERM GOALS (0-2 YEARS)

In the near term, we aim to establish company-wide benchmarks for typical projects to meet specific CO₂e criteria and to incorporate new sustainable products or technologies into a select number of projects within the first year.

MATERIAL SPECIFICATIONS

- Prioritize materials with lower embodied carbon without compromising quality or performance.

BENCHMARKING AND TRACKING

- Start tracking metrics to monitor progress and identify areas for improvement.
- Incorporated LCAs into project workflow.
- Set measurable CO₂e targets for various project types, creating a baseline for future comparisons.

INNOVATION AND INTEGRATION

- Incorporate sustainable products or technologies in as many project as we can throughout each year.
- Evaluate the performance and carbon impact of these innovations for future implementation.

LONG-TERM GOALS (2-5+ YEARS)

We aim to develop and integrate a workflow to prioritize embodied carbon reduction at key project milestones. This includes utilizing real CO₂e data to inform decisions for project teams and stakeholders, and ensuring sustainability is a core consideration throughout the project life-cycle. Additionally, we aim to focus on developing material specifications that either reduce or set limits on carbon emissions.

WORKFLOW INTEGRATION

- Establish clear decision points in the project timeline where reduction efforts are evaluated and implemented.
- Engage stakeholders early to ensure that CO₂e data drives design decisions and material choices.

LIFE CYCLE ANALYSIS (LCA)

- Conduct LCAs on primary and secondary structures to assess their carbon footprint.
- Use LCA results to guide material selection and design decisions, focusing on long-term sustainability.



UI Health Specialty Care Building | Chicago, IL



Lessons Learned

- A company-wide committee is working on implementing changes to our specifications.
- Shive-Hattery wants to continue to focus on reducing embodied carbon by:
 - Vetting new technologies and products to incorporate into our designs.
 - Prioritizing sustainable design into our project workflow.
 - Conducting post-project sustainability reviews to see what sustainable options could have been made.



Reporting Plan



Broadlawns Community Clinic at Drake University | Des Moines, IA

In our second year the reporting plan has evolved to help Shive-Hattery in numerous ways for internal and external goals. We have taken steps to provide more accurate Life Cycle Analyses for our database as well as helping achieving LEED points on Shive-Hattery projects, previously not a task we could undertake internally.

Having more accurate embodied carbon results can help us refine our database and let us see a clearer picture of if our reduction strategies are showing signs of achieving our embodied carbon goals.

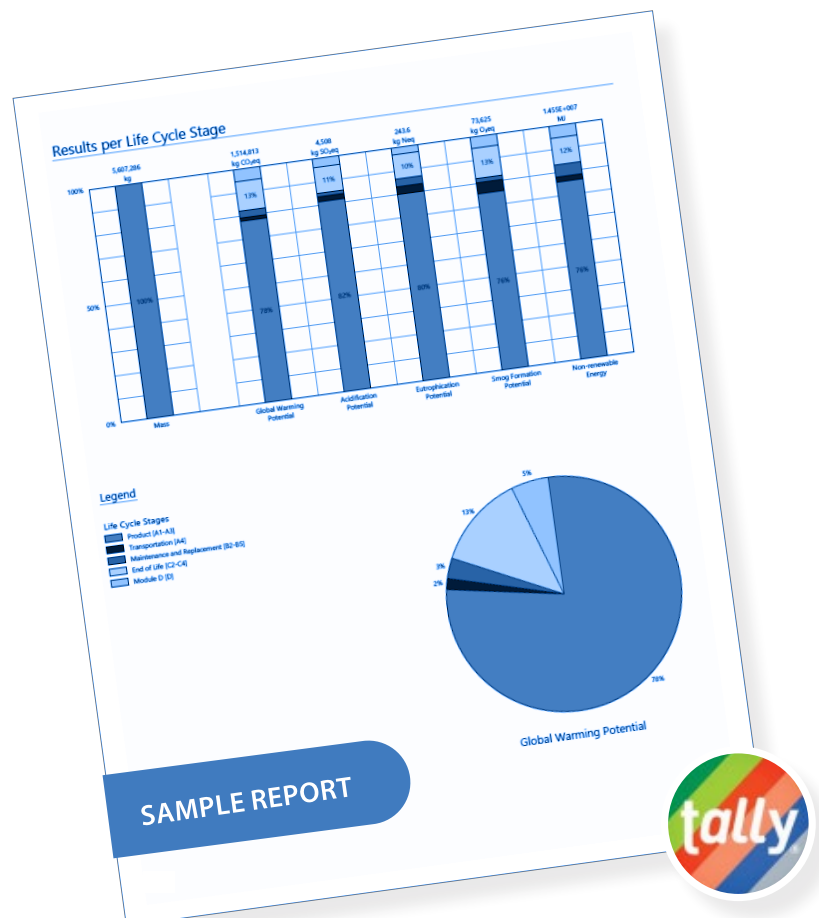
REFINING OUR LCA ANALYSIS APPROACH

Shive-Hattery is still utilizing Tally LCA for its LCA analyses. Our team attended the Embodied Carbon Bootcamp in Boulder, Colorado in June of 2025, which helped us gain knowledge regarding using accurate and appropriate EPDs for our analysis. In addition to finding more resources for EPDs we have also been able to add asking concrete and steel producers for their specific EPDs into our project process. This has been a successful way for us to get the most accurate information for a project.

As a result of our efforts, Shive-Hattery is now able to offer full building LCA for LEED points and/or to meet client embodied carbon goals.

BECOMING A RESOURCE FOR LCA AT SHIVE-HATTERY

The Sustainable Structural Engineering group has become a company-wide resource for LCA and embodied carbon for all Shive-Hattery employees. This has opened new opportunities for Shive-Hattery to engage in embodied carbon discussions with clients and subcontractors throughout the project. This proactive approach has shown to our clients that sustainability is a core belief of Shive-Hattery and that it should be thought of throughout the design process.



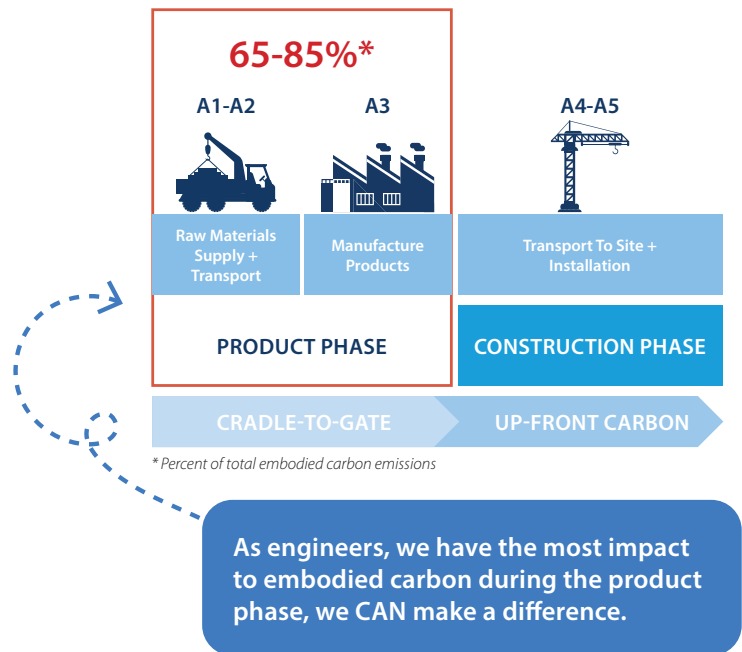
MATERIAL COMPARISONS & BOMS MADE EASY

Another area that has helped us bring sustainability to the forefront is the ability to do building material comparisons and Bill of Materials (BOM) so that project groups can accurately analyze the data and provide feedback to other disciplines on how the big decisions can affect the total embodied carbon output of their projects. By having these open discussions, it brings a level of awareness to our employees that they previously did not have - especially early on in schematic design of project. These discussions reinforce that structural engineers should be introduced into the project timeline earlier in projects, which helps us report on potential embodied carbon savings on projects.

MANAGING DATA FOR PRESENTATIONS TO CLIENTS

Having a more defined reporting plan in place has helped Shive-Hattery bring sustainability topics to the table for discussions with clients that were previously unavailable. We are now able to accurately and confidently report on what decisions can be made to make projects more sustainable, with actual project data to back us up. With our ever-growing database, clients are able to be the most informed on building performance in regards to embodied carbon.

LIFE CYCLE ASSESSMENT PHASES



Lessons Learned

- Shive-Hattery attended a multi-day EPD Bootcamp - to help sharpen our skills on completing full building LCA.
- We have also made it customary of asking for product specific EPDs on projects, instead of relying heavily on industry regional averages. This has helped Shive-Hattery keep track of a more robust database of total Global Warming Potential (GWP) output.
- Shive-Hattery has started to develop a company-wide LOD into its modeling on projects where a known LCA will be performed to achieve a more accurate analysis.
- Shive-Hattery has also been able to provide a new resource for clients to compare structural materials for GWP savings.
- Shive-Hattery has been able to perform full building LCAs to demonstrate savings in GWP to achieve multiple LEED points in projects.

Advocacy

Howard Commons Grand Opening | Howard, WI

The Value of SE2050

We recognize the significant impact embodied carbon has on the global environment. As key members of the design team, it is the structural engineer's duty to ensure that buildings and structures are safe to inhabit as well as incorporating efficient and sustainable products. As a company, we continue to take it upon ourselves to extend that responsibility to include strategies relating to the reduction of embodied carbon emission associated with structures.

One of the goals of our commitment to SE2050 is to share this perspective with our clients. This includes clients with ambitious sustainability goals and those just beginning to learn about the importance of reducing carbon emissions in construction. Over the past year of our commitment our team has been engaging with multiple clients, some who have asked and some who are unaware, on reduction strategies and providing LCAs for a multitude of different sectors.

PUBLIC DECLARATION

Last year Shive-Hattery developed a public launch campaign to announce our participation in the SE2050 Commitment. This included a SE2050 page to our company website and social media posts across all platforms. We are continuing to update posts and maintain engagement internally to continue to grow our sustainability team.

ENGAGING SUPPLIERS

As a company, in the past year we have engaged more with structural material suppliers. We have acquired more specific EPDs on materials to obtain up to date information, not just averages. We are continuously striving to build that information database, effectively engage the suppliers, and continue to foster healthy relationships with these companies and our clients.



Increase awareness regarding EPDs.



Foster collaboration with suppliers to encourage development and production of low-carbon options.



Advocate for EPDs across the industry.



Provide case studies showcasing successful examples where EPDs led to positive project outcomes.



Explore opportunities for joint initiatives to focus on creating new low-carbon materials or improving existing.



Seattle Storm Center for Basketball Performance | Seattle, WA

Knowledge Sharing Narrative

Shive-Hattery continuously strives to design for a more sustainable future and embodied carbon reduction is at the core of our approach. Our strategy for communicating our efforts externally needs to revolve around transparency, collaboration, and continuous learning.

When our engineers and architects discuss embodied carbon with clients at the beginning stages of a project, it's crucial to frame the conversation in a way that aligns with the client's goals and values. By having this conversation early, engineers and architects can ensure embodied carbon reduction is embedded into the project from the start, paving the way for a successful and sustainable project.

Company-wide, we share case studies that bring our projects to life and demonstrate how our strategies can be applied to different types of projects. We encourage collaboration and invite feedback from our peers and clients, fostering a community that's just as passionate about sustainability as we are.

EXTERNAL COMMUNICATIONS

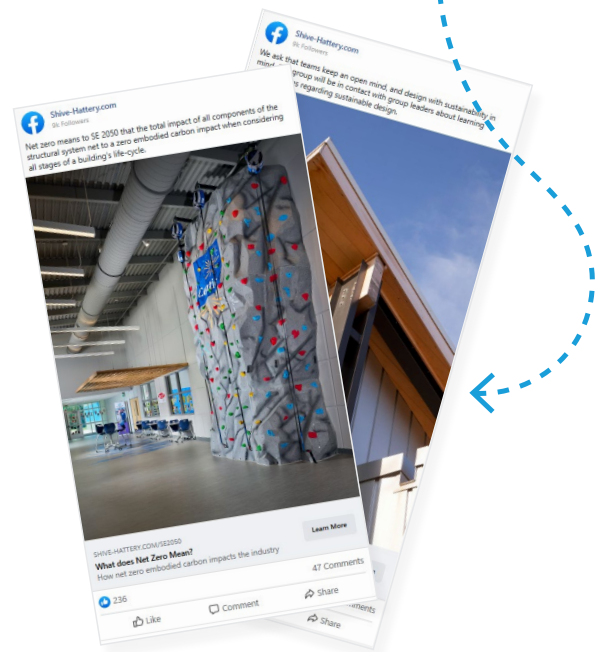
SHIVE-HATTERY.COM

Our firm's website is a prime platform for showcasing our commitment to sustainability. We have created and continue to update a dedicated section on embodied carbon reduction, featuring case studies, success stories, and ongoing projects. In addition, we have been publishing blog posts diving deeper into specific topics, such as innovative materials or industry trends, and offering insights from project team members.

SOCIAL MEDIA

Platforms like LinkedIn, Facebook, and others allow us to reach a broader audience, including industry peers, clients, and the general public. We continue to share quick updates, infographics, and short videos that highlight our achievements and educate followers on the importance of embodied carbon reduction. Other efforts include industry publications and speaking engagements to encourage additional collaboration regarding our efforts.

By making our embodied carbon reduction work a shared journey, we are not just building better buildings—we are **DESIGNING WHAT MATTERS, TO MAKE THE WORLD A BETTER PLACE.**





Lessons Learned

- Shive-Hattery has been sharpening our knowledge on tools available to provide to clients to continue embodied carbon reduction.
- Our continued engagement internally through social media posts has helped grow interest in our cause and the sustainability team.
- Our continued engagement with material suppliers has helped us build our information database for products that we are able to provide to clients.
- Our continued engagement with clients has helped us to communicate our intentions, strategies, and products.
- The earlier the conversation is started with clients, engineers, and architects the better, allowing us to properly show potential strategies and options for design.



THANK YOU

Shive-Hattery is deeply committed to reducing our carbon footprint through collaborative and conscientious design practices. We recognize that to make a meaningful impact, our efforts must extend beyond internal initiatives—we must advocate for and actively engage in industry-wide change. This begins with transparent advocacy and rigorous reporting of our reduction efforts, which not only hold us accountable but also serve as a model for others. However, we understand that education is the cornerstone of lasting transformation. By equipping our teams and clients with the knowledge and tools to prioritize sustainability, we can drive broader adoption of low-carbon practices across the industry.

As we progress toward our commitment to the Structural Engineers 2050 (SE2050) Challenge, which aims for net-zero embodied carbon in structural systems by 2050, **we remain optimistic about the future of low-carbon construction.** Through innovation, collaboration, and education, we are not only contributing to a more sustainable built environment but also paving the way for a greener, more resilient industry.



As designers, we influence how every project shapes its community and the scale of its environmental footprint. Reducing embodied carbon is not only a responsibility but an opportunity to design with greater intention. Measuring the carbon impacts of our decisions creates clarity, strengthens our work, and helps clients make informed choices that support future generations. Advocating for carbon reduction across the built environment allows us to support meaningful change and create healthier, more resilient communities.

**-Ryan Anderson, AIA, LEED AP BD + C
Architect**



APPENDIX

ELECTIVE REQUIREMENT SELECTIONS

EDUCATION

1. *Provide a narrative of how the Embodied Carbon Reduction Champion will engage embodied carbon reduction at each office.*
2. *Present at least (1) webinar focused on embodied carbon and make a recording available to employees. (Include this resource in your orientation and on-boarding program.)*
3. *Incorporate embodied carbon education in your onboarding process for all new employees.*
4. *Train all of your firm's structural engineers on the core concepts and skills required to measure, reduce, and report embodied carbon. (Ref. SE2050 resources)*
5. *Initiate an embodied carbon interest group within your firm and outline their goals. This group may more broadly address sustainability, but they must include embodied carbon.*

REPORTING

1. *Submit a minimum of (2) projects per U.S. office with structural engineering services to the SE2050 Database. You are not required to submit more than (5) total projects across your firm, but we encourage you to submit as many as possible! Firms are expected to follow with the spirit of the SE2050 Program in determining how many total projects your firm must submit. You do not need to consider offices that only offer construction administration services or offices with fewer than (5) full-time employees.*
2. *Compare the embodied carbon emissions from multiple projects across your firm. Analyze and document what data or pieces of information are most important and communicate the findings to your firm.*

REDUCTION

1. *Set clearly stated, firm-wide reduction targets in the short-term (<1 year) and long-term (>5 years).*
2. *Develop and implement a workflow that makes it easier to make early design decisions based on embodied carbon.*
3. *Compare different design options with embodied carbon as a performance metric during the project concept phase. Explain what you did and what the results changed (if anything).*
4. *Incorporate sustainably harvested biogenic materials in at least one project.*

ADVOCACY

1. *Describe the value of SE2050 to clients. How can your design teams collaborate to reduce embodied carbon? Please attach any associated marketing materials*
2. *Publicly declare your firm as a member of the SE2050 Commitment however you see fit (e.g. on your website, LinkedIn, or other social media).*
3. *Engage with structural material suppliers in your region to communicate the importance of Environmental Product Declarations (EPDs) and low-carbon material options.*

