

SE2050

Embodied Carbon Action Plan



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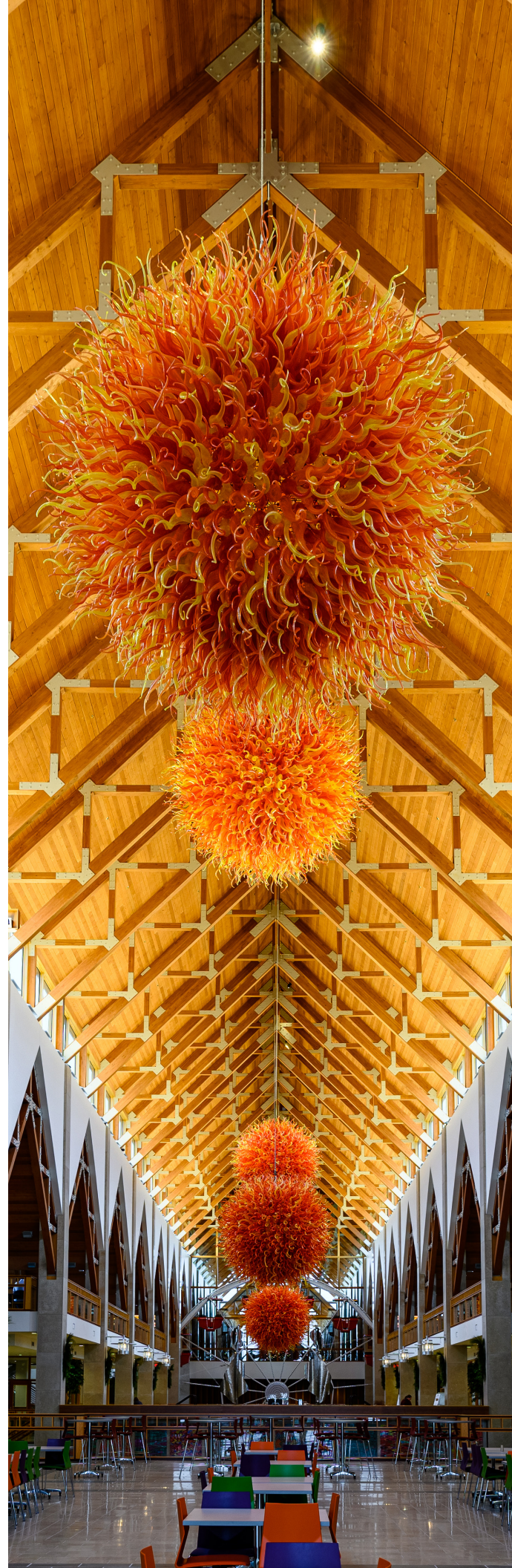
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About PE

Pierce Engineers, founded in 1991, is a 70-person structural engineering firm based in the Midwest, working with clients across the nation. Our four offices in Milwaukee, Madison, Chicago and Denver work as one team with daily interaction and coordination on technical topics, projects, and management.

The PE team has a traditional hierarchy of positions and roles, but we work horizontally fostering engagement from all levels of experience to create a successful team and develop our younger staff. Our practice is founded on building lasting relationships with clients and industry partners, who appreciate our teamwork and cost-focused approach to structural engineering.

While our experience and expertise encompass all types of building projects, we find that the best projects are the ones where the team works in a collaborative approach to deliver a successful project.

Services

PE specializes in structural designs utilizing concrete, structural steel, wood framing, and cold-formed metal framing systems, for both new construction and renovation projects. We also design various foundation systems as required for each project site. Using our familiarity with a variety of materials and framing systems, we evaluate multiple systems in schematic design to determine the ideal system for each project, considering constructability and cost.

Pierce Engineers also offers restoration services for structural, non-structural, and historic building elements along with waterproofing, sealant and coating protection of structures. Our services provide owners with performance-based, cost-effective repair and protection solutions for their specific structure's issues and use criteria.

SE 2050 Committee



Alex Olson
Structural Designer
Milwaukee Office



Alex Stern
Structural Designer
Chicago Office



Ashley Sanner
Project Manager
Denver Office



Bryn Glennon
Structural Designer
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Dale Feil
Structural Engineer
Madison Office



Frank Niziolek
Structural Designer
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Kylee Radmer
Marketing
Coordinator
Milwaukee Office



Sarah Frecska
Principal
Milwaukee Office

Education

Pierce Engineers believes there are two important steps to embodied carbon education for our firm. Internally, we must continue to educate ourselves – we all must constantly evolve and improve. Externally, we must educate our clients and our community to help them make decisions that will have a positive impact on the sustainability of their projects.

Embodied Carbon Champion Responsibilities:

Educating Ourselves – Promoting education internally within our SE 2050 Committee allows for growth for all, whether in a design or management role. Providing webinars, presentations, and demonstrations as continuing education is a staple of our industry and can be translated to sustainability in the same ways.

Educating Company – Our goal is to provide access for everyone at PE to work sustainability into our current design philosophies. We plan to implement Life Cycle Analysis programs, create sustainability folders within our company cloud, and present seminars from our SE 2050 committee.

Educating Clients/Contractors - Pierce Engineers specializes in a vast array of materials and works with clients to determine the best material for that project dependent on cost and constructibility. It is our duty to bring all pertinent information about the structure to the clients attention, including the environmental impacts.

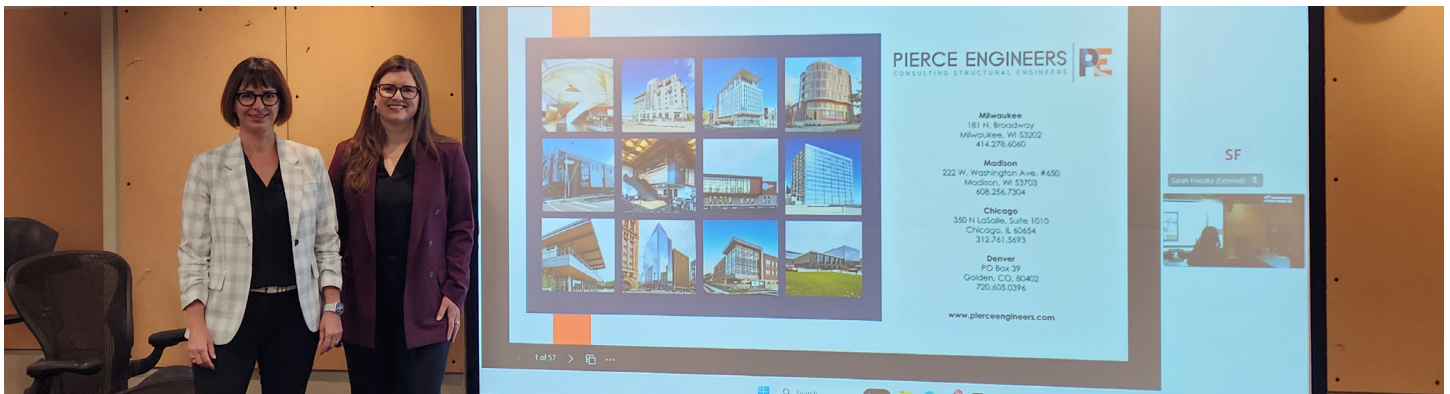
Education Goals

Completed:

- Company wide presentation about the initiatives of the SE2050 committee and completed ECAP

2026 Action Items:

- Updates Company Standard Specifications to include reduced carbon elements.
- Continue to work with PE's material standards committees to create reduction targets and narratives
 - Identify and promote one industry presentation about an embodied carbon/sustainability topic each quarter



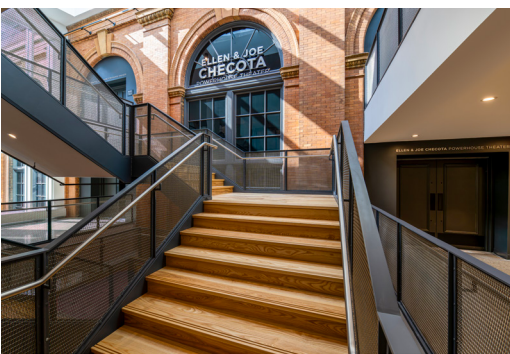
Advocacy

Completed:

- Our declaration of joining SE2050 is featured on our website.
- The Denver office joined the SEAC Sustainability committee to stay knowledgeable and active in the sustainability community of the mountain region.
- PE has participated in several early discussions with owners to help influence their decision to use Mass Timber instead of steel or concrete for all or portions of a building. These projects are still in the early design phase.
- PE participated in SEAOL Sustainability Design Committee design charrettes.

2026 Action Items:

- Develop innovative low carbon hybrid systems with contractor and supplier input. We are working with a local mass timber manufacturers and a cold-formed metal framing subcontractor to explore cost-effective CLT spanning to CFMF hybrid building typology.
- We have created a sustainability presentation to educate PE employees about the benefits of SE2050 and the action items that can be implemented in all our designs to help reduce embodied carbon. We are working on creating material specific recommendations that can be used as a cheap sheet by our engineers.



Reduction

Our reduction strategy includes implementing innovative design strategies and tools, optimizing our structural systems, using materials with lower embodied carbon, and engaging in life-cycle assessments. Taking these steps towards carbon reduction not only aids meeting the SE 2050 objectives, but further establishes Pierce Engineers as a leader in promoting environmentally responsible engineering practices in the AEC industry.



Reduction Initiatives

Completed Summary

- PE has historically promoted wood-framing in many multi-family housing projects and we are excited to continue to encourage the use of biogenic materials to our clients.
- Designing materials close to maximum utilization ratio to limit use of excess materials.

2026 Action Items:

- Consider designing for deconstruction whenever possible.
- Strive to reuse structural members during renovation rather than having them become construction waste.
- Consult with architects regarding their efforts for AIA 2030 to determine if there are ways to collaborate our efforts on reaching goals for both programs.- Encourage local sourcing of structural materials whenever possible
- Stay up-to-date on low carbon concrete innovation
- Compare different design options with embodied carbon as a performance metric during the project concept phase.

Long-term Actions Items (next 5 years):

- Implement GWP limits for all major structural materials into our specifications
- Implement required EPDs for all major structural materials into our specifications

Reporting

Summary:

Reporting of the embodied carbon results for diverse types of construction projects is an important aspect of self-reflection. As engineers, we have a responsibility to help improve our industry practices by mitigating negative environmental impacts. The measurement and reporting of these values assists project stakeholders in assessing the impact of material choice during planning and design stages. We joined SE 2050 because we are committed to embracing and promoting sustainable design practices.

Tally will be used to calculate embodied carbon of primary structural elements by pulling data directly from modeled 3D elements created within our Revit project models. Once each material type and quantity is pulled in, we assign EPD data to each structural material used. The EPDs we use to collect this data are already built into Tally. Tally does allow for custom input of EPDs, but currently our clients and projects do not provide us with EPD data. After Tally has pulled this data, the data is summarized for us into a PDF and an excel file. These files break the data down into material type, as well as structural usage such as foundation, beams, columns, etc. Tally allows us to analyze project from A-C using generalized assumptions of end of life, but our primary focus is on A1-A3.

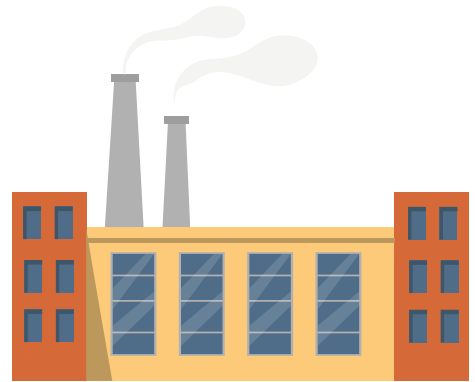
Production Stage



Extract Raw Materials
A1



Transport to Factory
A2

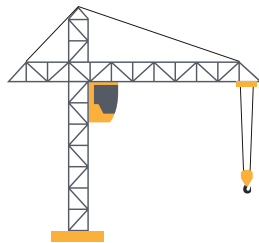


Manufacture Products
A3

Construction Stage



Transport to Site
A4



Construct the Building
A5



B1-B7



C1-C4

Use

End of Life

Measuring and Reporting:

- Through collaborating between all offices, we will create a standardized measuring and reporting process for all building material types. This process will allow us to compose results in a manner that facilitates cohesive and easy comparison.

Analysis, Comparison, Documentation and Communication:

- Analyze the impact on embodied carbon for each material type of equivalent size projects.
- Share our findings through company monthly email and marketing platforms.

Promoting:

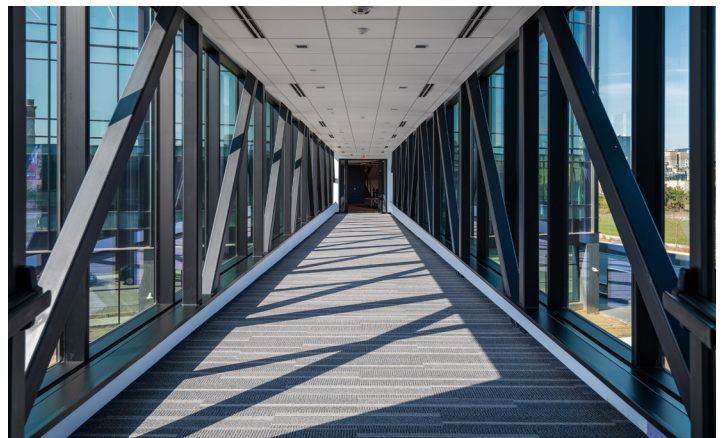
- Include language recommending embodied carbon analysis into contract documents.
- Promote our involvement in SE 2050 in our continuing education presentations, our annual year in review and on our website.

Completed Summary:

- Create a "Tally Expert" position in each office
- Perform LCAs for the cradle-to-gate production stages (A1-A3) and for the applicable projects, analyze construction stages (A4-A5).

2026 Action Items:

- Collect EPDs from local manufacturers that can be used in LCAs
- Perform LCAs
 - during the SD, DD, and CD phases of the design process.
 - at the end-of-life stages (C1-C4) of restoration projects.





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