

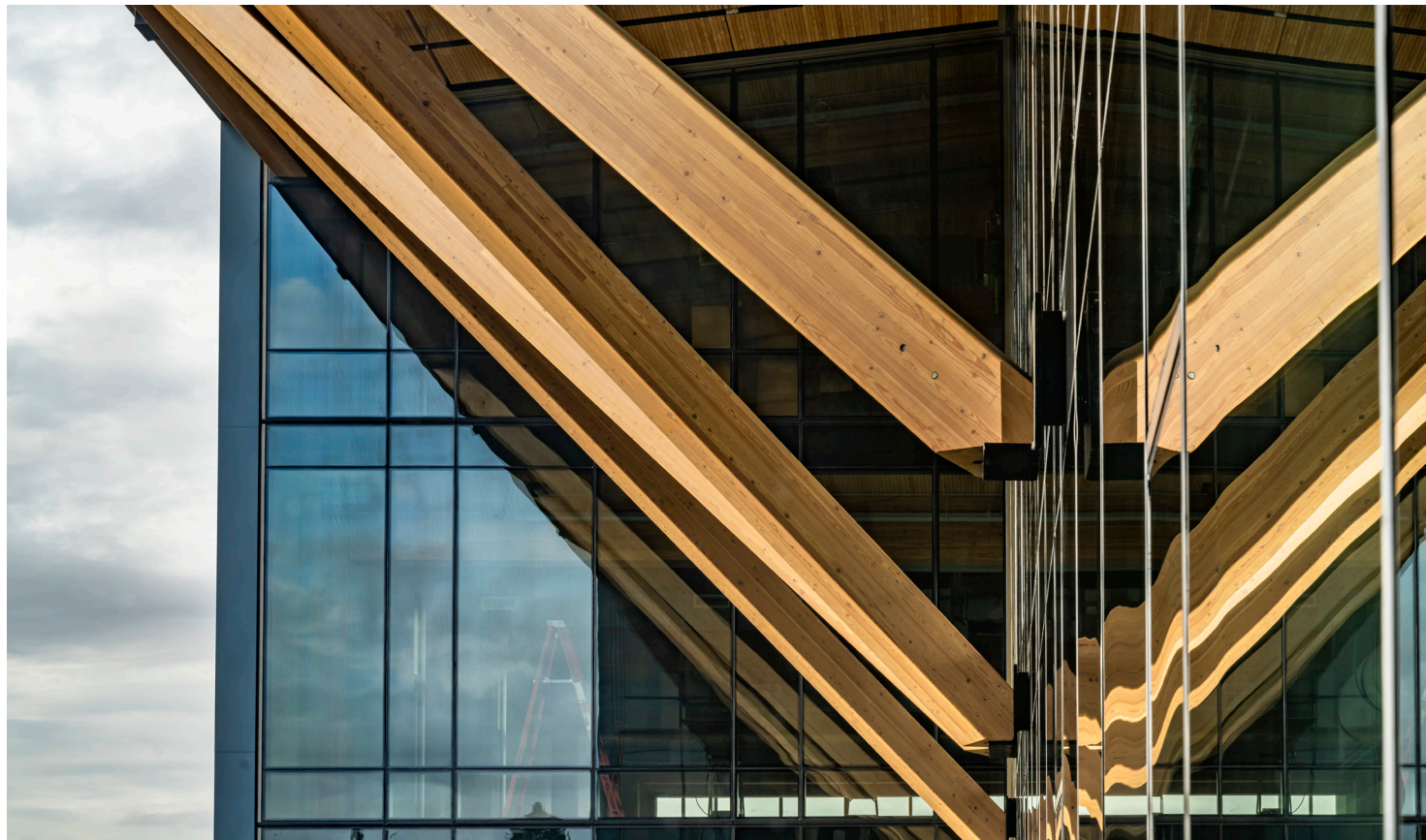


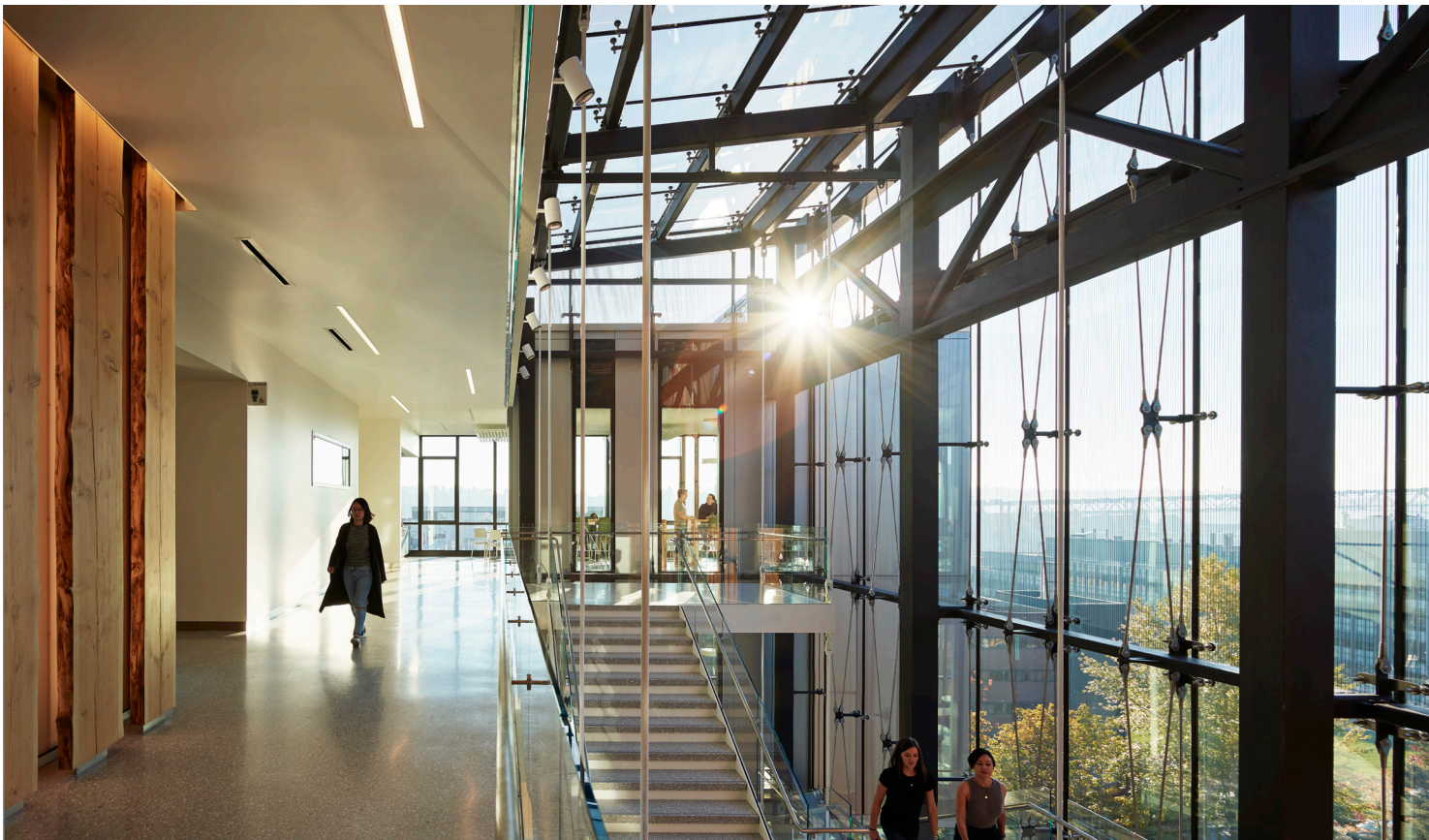
setting the bar higher

Saying we “think like an owner” means that on every project, we create material-use efficient designs that are easy to build and fully aligned with the project goals. We don’t over-design—it’s bad for the budget and bad for the planet.

Coughlin Porter Lundeen delivers sustainable design solutions since its inception through various iterations of initiatives such as LEED, LBC, and WELL. We support design and construction teams by keeping current with these programs as they evolve (focusing on any structural or civil nuances) and understanding their value to the industry and the world.

Alongside our AEC partners, we lower the carbon footprint for structures we design using a holistic and data-driven approach. When we collectively raise the bar, the market responds. We are dedicated to maintaining our commitment to the SE 2050 Challenge and the impacts we make on the built environment.





a measured approach

The building sector accounts for nearly half of greenhouse gas emissions. As structural engineers, we contribute pivotally by tracking the materials used in our structures to dial down carbon intensity. By adopting the SE 2050, we help project teams create whole-building Life Cycle Assessments (LCAs).

Coughlin Porter Lundeen played a pioneering role in implementing the Embodied Carbon in Construction Calculator tool (EC3). Like LEED in its infancy, the EC3 tool gained traction and contributed to a significant rise in the number of manufacturers submitting Environmental Product Declarations (EPDs), resulting in more transparency in our industry.

Enticing eco-conscious alternatives, transparency with established materials, and tools like Athena and Tally allow us to measure and reduce embodied carbon in our structures.

sustainability task force

Coughlin Porter Lundeen's task force continues to integrate sustainability into the design process creatively. With several LEED credentials added to the team's resume in the past year, the firm recognizes the value of promoting sustainable practices to all clients.

As the designated embodied carbon champion, Laura Lindeman uses her strong analytical and design skills to provide effective and appropriate sustainable solutions for Coughlin Porter Lundeen projects.

She participated in the early adoption of the EC3 tool for the 3 million-square-foot Microsoft Redmond East Campus Modernization and led the tool's integration as a firm-wide standard for carbon tracking.

Laura tracks and reports project embodied carbon levels to support the firm's commitment to the SE2050 Challenge. She assesses and calculates the embodied carbon footprint for current projects and sets future reduction goals. Her advocacy efforts include leadership of the firm's Sustainability Task Group, NAIOP Sustainable Development Committee membership, and active involvement with the Carbon Leadership Forum Seattle Hub.



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structural embodied carbon benchmarking



PROJECT: WSU Schweitzer Engineering Hall

MATERIAL: Steel & CLT

SIZE: 3 Stories | 65,000 SF

COMPLETION: 2026

- / College of Engineering steel-framed and mass timber welcome center for engineering and architecture students.
- / The 3-story building features a steel buckling-restrained braced frame (BRB) lateral system with composite steel floors and CLT decking.
- / Sustainable strategies include incorporating mass timber where possible and requiring EPDs for structural materials to understand Global Warming Potential (GWP) reductions from industry baselines.
- / The LCA helped build our internal embodied carbon benchmarking for higher education steel projects.



PROJECT: UW Haggett Hall

MATERIAL: Concrete & Wood

SIZE: 9 Stories | 230,000 SF

COMPLETION: 2027

- / Light wood framed residence hall offers 800 beds, 12 parking stalls, a loading dock, and fitness and wellness centers.
- / Building features separate concrete and wood floor plates which are seismically jointed. Concrete and wood shear walls are the primary lateral resisting systems.
- / Increased concrete cure times to reduce the carbon intensity in concrete elements.
- / The LCA helped build our internal embodied carbon benchmarking for residential concrete and wood projects.

structural embodied carbon benchmarking



PROJECT: Holland Chambers

MATERIAL: Concrete & Wood

SIZE: 6 Stories | 203,500 SF

COMPLETION: 2025

- / The wood frame mixed use building provides 214 residential units, 155 parking stalls, a residential courtyard and amenity space, and 4,000 square feet of retail space.
- / Building features concrete shear walls and post-tensioned slabs up to podium level with wood-framed floors and shear walls above.
- / Increased concrete cure times to reduce the carbon intensity in concrete elements.
- / The LCA helped build our internal benchmarking for concrete and wood residential projects.



PROJECT: Ferndale High School

MATERIAL: Steel

SIZE: 3 Stories | 239,900 SF

COMPLETION: 2024

- / Accommodating 1,600 students, the replacement high school provides a gym with locker rooms, a three-story academic wing, a central commons space, an athletic field with grandstands, and a dedicated CTE building.
- / The academic wing's structural system includes BRB braced frames with pin connections and some exposed conditions. The athletic building and CTE building are pre-engineered metal buildings.
- / Designing the building with an efficient structural layout was an important strategy to keep the embodied carbon intensity as low as possible.
- / The LCA helped build our internal embodied carbon benchmarking for K-12 steel projects.

structural embodied carbon benchmarking



PROJECT: WWU Kaiser Borsari Hall

MATERIAL: Mass Timber & Steel

SIZE: 4 Stories | 56,000 SF

COMPLETION: 2024

- / The facility supports expansion of WWU's Electrical Engineering and Computer Science programs with labs, classrooms, and administrative space.
- / The primary gravity system is composed of cross-laminated timber (CLT) floor and roof panels supported by glulam timber columns and beams. The seismic system for the building consists of steel buckling restrained braced frames.
- / The team provided embodied carbon metrics that quantified carbon savings captured with a mass timber system, including how it compares to a conventional non-timber system.
- / The LCA helped build our internal embodied carbon benchmarking for wood higher education projects.



2025 embodied carbon action plan

EDUCATION

Coughlin Porter Lundeen is committed to continuously improving our firm-wide understanding of our projects' environmental impacts. Civil and structural engineers work together within the Sustainability Task Group to determine best practices and educate the staff in the ways shown below.

- / Present to the company how we promote a firm-wide education program for embodied carbon reduction and the firm's commitment to SE 2050. The recorded presentation provides a resource in our orientation/onboarding programs.
- / Share embodied carbon reduction strategies with Coughlin Porter Lundeen as outlined in the Top 10 Carbon Reducing Actions for Structural Engineers document produced by SE 2050.
- / Continuously update and distribute the SE 2050 resource library to Coughlin Porter Lundeen technical staff.
- / To stay informed on current sustainable practices, attend external education programs provided by Carbon Leadership Forum, Seattle 2030 District, USGBC, and other partners. The Sustainability Task Group meets in-house periodically to learn and share sustainable practices on projects.
- / Share internal training guides for embodied carbon calculations.

REPORTING

Tally is the primary life-cycle assessment (LCA) tool used in-house for measuring, tracking, and reporting structural embodied carbon data. We perform Tally LCAs at the end of design close to 100% Construction Document issuance. Using material quantities from our structural Revit model, we include life cycle stages A-D. Data from Athena, Tally CAT, One Click LCA, and the EC3 tool also inform carbon-reducing decisions during different design stages for our projects.

Coughlin Porter Lundeen states EPD requirements and Global Warming Potential (GWP) limit values in our material specifications. We verify EPD availability for materials with the EC3 tool and use GWP limit values in our embodied carbon calculations.

- / Submit five projects to the SE 2050 Database.
- / Internally compare embodied carbon emissions between multiple projects. Identify the data that contributes the most to the analysis and communicate the findings to the firm.



WSU Schweitzer



UW Haggett Hall



Holland Chambers



Ferndale High School



WWU Kaiser Bosari Hall

EMBODIED CARBON REDUCTION STRATEGIES

As sustainable practices evolve, we seek creative solutions that provide both economic and environmental value. Coughlin Porter Lundeen embraces the expanded sustainable design role we can play in projects.

SHORT-TERM

- / Compare embodied carbon calculations to baseline values that reflect the industry's most current averages. Promoting realistic data drives the industry forward.
- / Calculate Coughlin Porter Lundeen's average benchmark for embodied carbon for different building types, materials, and market sectors.
- / Modify standard structural specifications to allow longer concrete curing times for foundations, shear walls, and columns where possible.
- / Communicate embodied carbon impacts of different design options to clients with creative and effective data visualization.
- / Promote the use of mass timber in projects.
- / Request EPDs from manufacturers to make better informed structural material decisions.

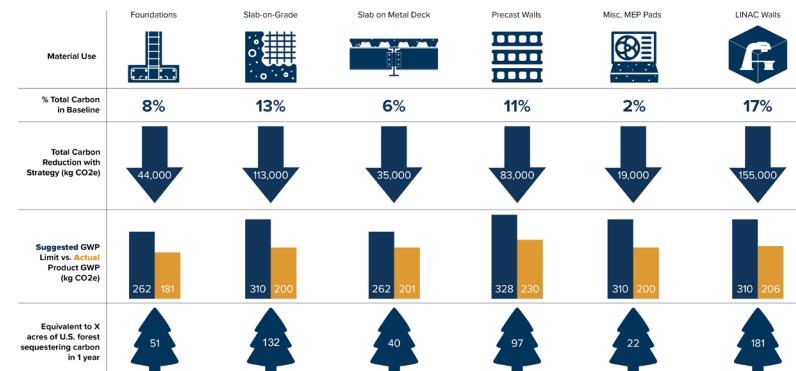
LONG-TERM

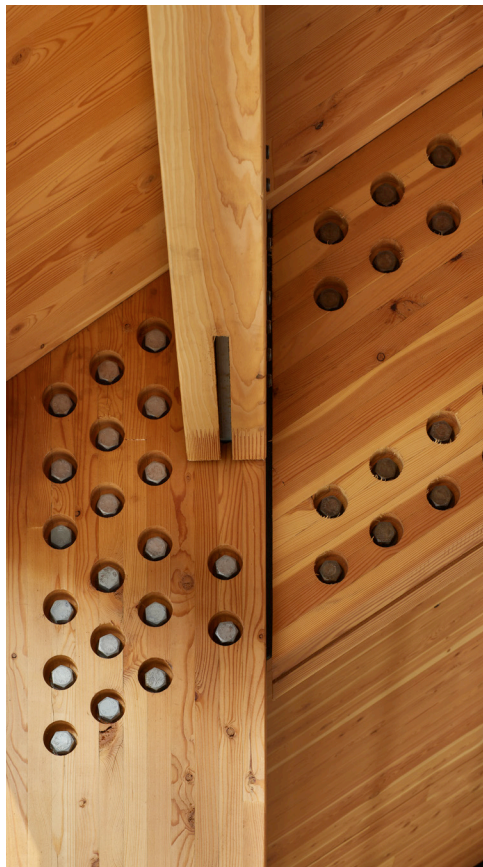
- / Embrace carbon-reduced structural materials as they are adopted into code.
- / Perform life cycle assessment (LCAs) for most projects.
- / Produce several carbon-neutral designs.

ADVOCACY

Many clients are increasingly concerned about sustainability. Coughlin Porter Lundeen leads conversations in the early stages of design to help identify key contributing factors to minimizing embodied carbon.

- / Describe the value of SE 2050 to clients, focusing on how – together – we can collaborate to drive adoption.
- / Share the firm's commitment to SE 2050 on our company website and include in proposal language.
- / Start an embodied carbon community of practice and mentorship program within the office.
- / Present externally on embodied carbon, demonstrating project success and lessons learned.
- / Engage with structural material suppliers in your region to communicate the importance of Environmental Product Declarations (EPDs) and low-carbon material options.





lessons learned

There is a myth that sustainability adds cost and jeopardizes project goals. However, opportunities exist to decarbonize at scale with practical, and even cost neutral, approaches to procurement that can be applied to other operational green purchasing strategies.

SOURCING LOCALLY

Early conversations allow sufficient time for local material suppliers to obtain environmental product declarations (EPDs) which not only helps the local economy but also reduces carbon in transportation. This opportunity invites smaller communities to take part in the sustainability conversation, while pushing the construction industry forward with the addition of more environmentally-conscious partners.

Coughlin Porter Lundeen's sustainability task force takes advantage of early conversations between the architect, engineers, and contractor—especially in a design-build project—to identify multiple strategies for meeting target sustainability goals while keeping the project budget in mind. This year, Coughlin Porter Lundeen, alongside industry partners, had notable success in pushing concrete suppliers in Port Townsend and Pullman, WA to produce their first set of EPD's.

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