

SE 2050 EMBODIED CARBON ACTION PLAN (ECAP)



Nous is committed to promoting the practice of sustainability in our structures to help achieve net zero.



SE 2050 Commitment

Nous Engineering has joined the SE 2050 Commitment. The SE 2050 Commitment program was developed and launched by the Structural Engineering Institute (SEI) and issued by the Carbon Leadership Forum (CLF). This comprehensive program has been created to ensure substantive embodied carbon reductions in the design and construction of structural systems by the collective structural engineering profession. The sharing of research and data on embodied carbon metrics will open up valuable resources and dynamic collaboration for the entire industry to learn from. Acquired knowledge is used to teach our staff and clients about the impacts of embodied carbon, providing a valuable dialogue and plan to move forward. By dedicating to SE2050, and committing our resources, we hope to create a process for the elimination of embodied carbon that will be an industry standard.

Nous is committed to finding favorable carbon reduction solutions for all of our projects across various geographic locations.



Based in Los Angeles, with a satellite office in San Diego, Nous works across the globe. Our projects are diverse and dispersed, aligned in their need for innovative solutions to resolve complex requirements, formal, technical or otherwise. All of our projects flow through the Los Angeles office making it easier to enact sustainability initiatives at a firmwide level. Design phase processes, material preference, and contractor knowledge vary by location. Collecting and using data from different markets gives us valuable insight that cannot be achieved by reviewing one area on its own. Collectively, this information helps us in finding the best solutions for each particular geographic location's need.

Nous is committed to educating our team on how we can best integrate carbon reduction efforts into our practice.

As part of Nous's commitment to sustainability and reducing embodied carbon in our projects, we have undertaken several key initiatives to ensure that our team remains at the forefront of current industry practices.

In our ongoing effort to enhance our knowledge of embodied carbon and its impact on the built environment, our entire office participated in the Boston Society of Architecture's "Embodied Carbon 101" Lecture Series. This series provided foundational insights into the environmental impact of materials and construction processes, serving as an essential learning experience for all staff members. By engaging with experts in the field, we gained a deeper understanding of the complexities of embodied carbon, empowering us to make more informed decisions in our projects.

To further our understanding and ability to reduce embodied carbon, we specifically researched various construction materials, comparing their carbon footprints and identifying opportunities for optimization. We recognized the importance of learning directly from industry leaders, which led us to organize a series of Sustainability-Focused Lunch and Learns. We invited experts from key material manufacturers to share their knowledge with our team. Arcelor Mittal provided valuable insights into steel production and its sustainable applications. SmartLam discussed the environmental benefits and carbon reduction potential of timber. Cemex shared their expertise on concrete, focusing on low-carbon alternatives and innovations in the industry. These sessions allowed us to engage directly with the experts, ask specific questions, and gain practical knowledge on optimizing the use of these materials in our designs.

Through these sessions, we learned critical best practices for material selection and design, helping us optimize the use of steel, timber, and concrete while minimizing carbon emissions. The information shared during these discussions has been pivotal in refining our material strategies and has become an integral part of our approach to sustainable structural engineering.

To ensure that our leadership team is fully equipped with the latest knowledge in embodied carbon, we sent two of our management staff to the first-ever Embodied Carbon Bootcamp. This intensive program focused on advanced strategies for reducing embodied carbon and provided a comprehensive understanding of how to integrate these practices into our firm's daily operations. Upon their return, these staff members shared their insights with the broader team, helping bring everyone up to speed on the latest developments in the field.

Nous Leadership Team



Mit Gala, SE
Associate, Nous

Mit Gala is a licensed structural engineer, focused on advanced analysis, earthquake resilience, and seismic evaluation and rehabilitation of existing buildings. As Nous’s Signatory Director to the SE2050 Carbon Reduction Program, he oversees and implements the firm’s sustainable design initiatives, with the aim of reducing the carbon footprint of Nous’ structures and promoting sustainable design and construction practices industry-wide.

Key Team Members



Omar Garza, SE
Principal, Nous



Matt Melnyk, SE
Principal, Nous



Liz Mahlow, PE
Principal, Nous



Jeff Roi, SE
Principal, Nous



Jon Buckley, SE
Principal, Nous

Nous is committed to measuring and tracking embodied carbon throughout the design process.

Nous harnesses the power of 3D BIM models to measure embodied carbon in a structure and to track sustainability metrics throughout the design process. BIM-CAT, a plug-in for Revit, is used as the primary tool for the measurement of embodied carbon. Much of our design work is already reliant on accurate building modeling, allowing for the easy integration of dynamic embodied carbon tracking into our normal workflow. Data obtained from BIM-CAT is supplemented with other industry and in-house computational tools to control data quality and to track a variety of sustainability metrics.

Nous has been advancing BIM modeling standards to incorporate parameters important to the tracking of embodied carbon, ensuring compatibility with BIM-CAT throughout the design process. The evolution and longevity of a project BIM model is consistent with the goal of tracking and understanding embodied carbon data throughout the design process. Continuity in approach across projects within the firm and developing some degree of automation are important goals. Embodied carbon data will be reported both internally, to Nous project teams, and externally, to our clients.

Going into our first year being an SE2050 member and as part of our firm's commitment to reducing the environmental impact of structural systems, we conducted Life Cycle Assessment (LCA) studies on two representative projects. Each was selected to reflect a different sustainability strategy—one through material efficiency in a typical residential context, the other through adaptive reuse combined with high-performance construction.

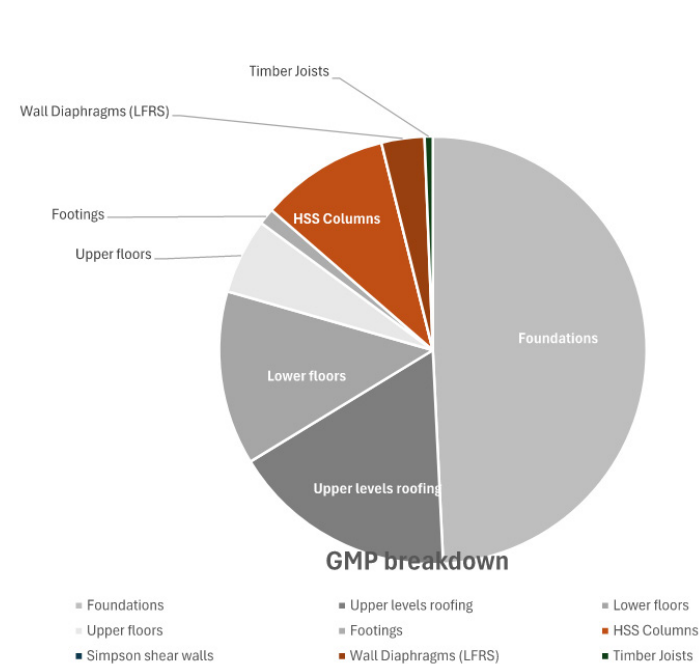


Nous Benchmark Project Data

Project I - Los Angeles, California
A single-family home perched on a steep Los Angeles hillside, San Andreas features concrete retaining walls and a timber-framed superstructure.

This project typifies a common residential typology in Los Angeles, where steep topography demands significant structural intervention, particularly in the form of retaining walls and deep foundations. These systems are inherently material-intensive and offer a valuable opportunity to assess and reduce embodied carbon in a familiar local context. The timber superstructure also allowed us to study the performance of renewable materials within a site-constrained, high-risk seismic zone.

The concrete retaining walls accounted for the majority of the structure’s embodied carbon. By analyzing this, we explored lower-carbon concrete options for future projects. The use of timber framing significantly helped reduce the building’s overall footprint, reaffirming the benefits of renewable materials. The project reinforced the value of efficient material use in topographically challenging settings.



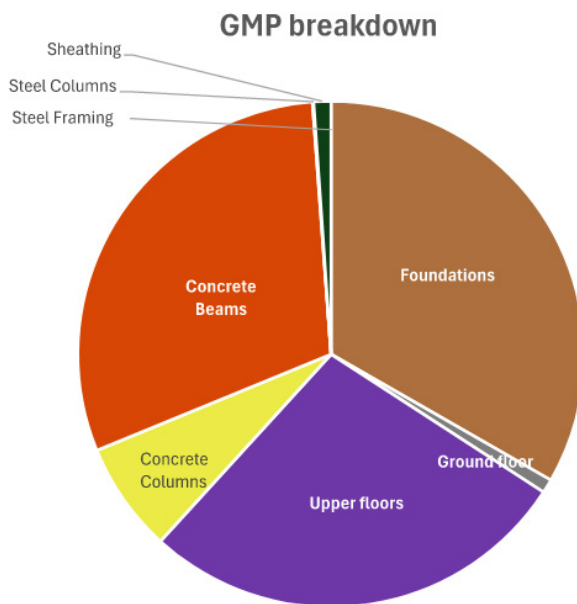
Nous Benchmark Project Data

Project II - Culver City, California

The Wende Museum project consists of two distinct components: a new three-story cast-in-place concrete structure housing galleries and support spaces, and the adaptive reuse of an existing single-story A-frame timber building, retrofitted and repurposed as a theater. The juxtaposition of new construction with architectural reuse made this a compelling case for Life Cycle Assessment (LCA).

This project was selected for its hybrid approach to sustainability—merging resource-intensive concrete construction with the environmental benefits of preserving and repurposing an existing structure. It provided an opportunity to study the embodied carbon implications of adaptive reuse alongside new construction, and to assess how retrofitting can meaningfully offset the impact of more carbon-intensive systems.

Reusing the A-frame structure avoided significant embodied carbon and extended the useful life of existing materials. While the new concrete structure was carbon-intensive, targeted optimizations helped reduce its impact. The project demonstrated how thoughtful reuse can meaningfully balance the environmental costs of new construction.



Nous is committed to engaging with our industry partners to continue to explore carbon reduction strategies together.

In our ongoing efforts to reduce waste and enhance sustainability, we are working closely with Angel City Lumber, a company specializing in salvaging fallen trees and repurposing them for structural applications. This collaboration allows us to use wood that would otherwise go to waste and incorporate it into our projects, further supporting our goal of reducing embodied carbon. By using these locally sourced, reclaimed materials, we are not only conserving resources but also contributing to a more sustainable, circular economy in the construction industry.

By actively investing in education, collaborating with industry leaders, and prioritizing knowledge-sharing within our firm, we are positioning ourselves as proactive advocates for carbon reduction in the structural engineering industry. These initiatives reflect our commitment to creating more sustainable, environmentally responsible solutions for our clients.



Nous is committed to enhancing our commitment to net zero through industry organization involvement.

Nous will engage with the broader design, construction and real estate industries as we partner on educating each other and enhancing our commitment to carbon reduction together. Nous will utilize our network of clients and design collaborators to expand our knowledge on the best practices for carbon reduction and informing clients and contractors of the benefits for the study and use of innovative materials and efficient designs. Our industry organization involvement includes:

- American Council of Engineering Companies (ACEC) of California
- American Institute of Architects, Los Angeles (AIA|LA)
- American Institute of Steel Construction (AISC)
- American Society of Civil Engineers (ASCE)
- Association for Women in Architecture + Design (AWA+D)
- LA Forum for Architecture and Urban Design
- Structural Engineers Association of California (SEAOC)
- National Organization of Minority Architects
- Urban Land Institute (ULI)



