

ECAP

Embodied Carbon Action Plan

March 31, 2026



STRUCTURAL
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1 Embodied Carbon Reduction Champions

1.1 Owjan Hashtroodi

Owjan Hashtroodi, PE, is an Associate at Resurget Engineering with over 11 years of experience in structural engineering, encompassing both new design and forensic investigations. His work across diverse structural systems and materials enables a performance-based approach that considers durability, constructability, and lifecycle impacts. Owjan is actively engaged in advancing the profession through teaching and industry committee involvement and supports the firm's SE 2050 commitment through the integration of embodied carbon tracking, data-driven design decisions, and continuous evaluation of low-carbon strategies.



1.2 Daniel Mognon

Daniel is a Structural Designer who has been with Resurget Engineering for the past two and a half years. During this time, he has gained experience across a wide range of building types and developed a strong interest in sustainable design. He is focused on integrating this passion into his structural work through practical, data-driven approaches. In his role, he will lead the development of an embodied carbon data collection workflow and help ensure that our firm meets its annual SE 2050 reporting requirements.



2 Commitment Letter

Your ref
Our ref
File ref

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January 2, 2025

Dear Jennifer,

Letter of Commitment to the SE 2050 Program

Resurget Engineering PC, a 20-person firm with offices in Detroit (HQ) and San Francisco, is hereby signing on to the SE 2050 Commitment Program. We support the vision that all structural engineers shall understand, reduce, and ultimately eliminate embodied carbon in their projects by 2050.

By enrolling in the SE 2050 program, our mission as a firm is to become one of the pioneers in sustainable practices in Michigan. We recognize that clients are prioritizing sustainability in their projects as industry standards are becoming increasingly environmentally conscious. This motivates us to adopt best practices for minimizing environmental impact, to meet and exceed our clients' expectations, building trust and credibility with those we serve.

We therefore commit Resurget Engineering PC to take the following steps which are part of the SE 2050 Commitment Program:

- Within six months and annually henceforth, we commit to reporting and Embodied Carbon Action Plan (ECAP) and permit the ECAP document to be made public on the SE 2050 website.
- Within one year and annually henceforth, we commit to submit data to the SE 2050 project database in a collaborative effort to understand embodied carbon in structural engineering projects and to set attainable targets for future projects.

We look forward to joining this coalition and industry effort to achieve the goals of the SE 2050 program.

Yours sincerely

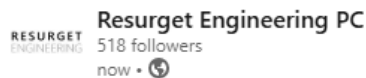


Jason Krolicki, PE
Principal

3 Internal Announcement

An internal announcement about our intention to join the SE 2050 initiative was made verbally to all employees on our annual away day. Employees have also been exposed to SE 2050 through occasional seminars and presentations that have taken place during previous lunch-and-learn sessions.

4 External Announcement



We're proud to announce that **Resurget Engineering PC** has officially committed to the SE 2050 Challenge.

As structural engineers, we play a critical role in shaping a more sustainable built environment. By joining this initiative, we are committing to measure, reduce, and ultimately eliminate embodied carbon in our structural designs by the year 2050.

This commitment reflects our belief that good engineering goes beyond strength and serviceability—it also means responsibility to our communities, our clients, and the future of our planet.

At Resurget Engineering, we are excited to:

- Track and benchmark the embodied carbon of our projects
 - Integrate low-carbon design strategies into our workflows
 - Collaborate with architects, contractors, and owners to drive meaningful change
 - Continuously learn and improve through data and industry engagement
- We look forward to contributing to a more sustainable future and working alongside others in the industry who share this vision.

#SE2050 #StructuralEngineering #Sustainability #EmbodiedCarbon #AEC #ClimateAction

5 Education

At our firm, we are committed to increasing staff awareness and competency in embodied carbon reduction through recurring internal education initiatives. We will conduct presentations on embodied carbon approximately twice per year as part of our weekly lunch-and-learn program. One session will focus on presenting our annual ECAP progress and updates, while the second will feature an external or internally developed seminar on embodied carbon reduction strategies.

The Embodied Carbon Reduction Champions will lead targeted training sessions on the use of embodied carbon assessment tools, such as Beacon, to evaluate project impacts. To support accurate analysis, the firm will update modeling standards to ensure that all major structural elements are consistently and appropriately modeled with correct material properties. The Champions will collaborate with relevant staff to develop and implement these standards.

Following this effort, a clear workflow will be established to integrate embodied carbon analysis into the design process.

In addition, the firm will host at least one company-wide webinar annually focused on embodied carbon, utilizing resources such as the Boston Society of Architecture database and other publicly available materials. Recordings of these sessions will be made available to all employees. Staff are encouraged to pursue additional learning opportunities and share relevant knowledge with the Embodied Carbon Reduction Champions to further encourage the use of best practices across the firm.

Electives Chosen

- Provide a narrative of how the Embodied Carbon Reduction Champion will engage embodied carbon reduction at each office.
- Present at least (1) webinar focused on embodied carbon and make a recording available to employees.

6 Reduction

6.1 Short-Term Strategy

- Track embodied carbon on a minimum of 30% of projects using an embodied carbon assessment tool such as Beacon.
- Establish baseline embodied carbon intensity metrics (e.g., kg CO₂e per square foot) for major project types, including concrete, steel, wood, and masonry structures, based on collected project data.
- Conduct at least one pilot project in which embodied carbon is evaluated at multiple design phases (e.g., schematic design, design development, and construction documents) to understand the impact of design decisions over time.

6.2 Long-Term Strategy

- Reduce embodied carbon intensity by at least 20% across the firm relative to the established Year 1 baseline.
- Track embodied carbon on 100% of projects, at a minimum through conceptual or schematic-level analysis, with increased detail as project scope and phase allow.
- Develop and implement low-carbon material standards, including:
 - Concrete: Target a minimum 25% reduction in global warming potential (GWP) relative to industry baseline values.
 - Steel: Prioritize procurement of lower-carbon steel, including materials with Environmental Product Declarations (EPDs) and reduced GWP where available.

Electives Chosen

- Set clearly stated, firm-wide reduction targets in the short-term (<1 years) and long-term (>5 years)

7 Reporting

Embodied carbon for structural materials will be quantified using the Beacon Revit plug-in. To support accurate reporting, firm-wide modeling practices will ensure that all major structural elements are consistently modeled with appropriate material properties.

The firm's life cycle assessment (LCA) scope will focus on modules A1–A3 (material production stages), where structural engineers have the greatest ability to influence embodied carbon through system selection, material specification, and coordination with project stakeholders.

Embodied carbon will be evaluated at multiple project phases to inform design decisions and track progress:

- Schematic Design (SD): Preliminary material quantities will be used to generate early embodied carbon estimates and benchmark projects against established baselines for similar building types. This enables early identification of reduction opportunities.
- Construction Documents (CD): Refined material quantities will be used to produce final embodied carbon calculations, allowing comparison against SD estimates and evaluation of the effectiveness of implemented reduction strategies.

This phase-based approach will support continuous improvement by helping the firm assess whether embodied carbon goals are being met and where design processes can be further optimized.

For the 2026 ECAP submission, the firm submitted two projects to the SE 2050 Database: the Wayne State University Health Sciences Building and the KIPP Imani Academy – Detroit. These projects were selected due to their high-quality modeling and suitability for embodied carbon analysis, as well as their representative scale and structural systems.

Both projects utilized steel framing with composite decking, with differing lateral systems (steel and masonry shear walls).

Moving forward, the firm will expand reporting efforts to include a broader range of structural systems, including wood and concrete, to better understand variations in embodied carbon impacts and tailor reduction strategies by material type.

8 Advocacy

The firm will promote embodied carbon reduction by engaging clients early in the design process and clearly communicating the value of the SE 2050 Commitment. Discussions regarding embodied carbon will be initiated during the schematic design phase whenever possible, allowing the project team to evaluate multiple structural system options and their associated environmental impacts.

By introducing embodied carbon considerations early, the firm can help clients make informed decisions that align with both sustainability goals and project constraints. This approach enables more effective implementation of low-carbon strategies, which are often more difficult or costly to incorporate at later design stages. In addition to environmental benefits, early embodied carbon analysis can support cost-effective design optimization and position projects to meet increasing industry and regulatory expectations.

The firm will also pursue collaborative “pilot projects” in which the architect, engineer, and contractor are aligned in prioritizing embodied carbon reduction throughout design and construction. These projects will serve as opportunities to test and refine strategies such as structural system optimization, efficient bay sizing, alternative material selection, and material quantity reduction. Lessons learned from these efforts will be shared internally to improve future project outcomes.

Through these efforts, the firm aims to integrate embodied carbon reduction into standard practice and strengthen collaboration with clients and project partners.

Electives Chosen

- Describe the value of SE 2050 to clients.
- Publicly declare your firm as a member of the SE 2050 Commitment.