



EMBODIED CARBON ACTION PLAN

2021

Embodied Carbon Action Plan (ECAP)

Wight & Company's award-winning structural design team is ready to take on the industry challenge of eliminating embodied carbon in buildings.



Images above: Lewis University Brother James Gaffney Student Center (left) and Ravinia Festival Dining Pavilion & Music Box Experience Center (right).

Wight & Company is an integrated delivery firm comprised of design and construction professionals and has offices in Darien, IL, Chicago, IL, and Denver, CO. As an industry leader in sustainable design and zero energy buildings, we support the vision that our staff must become well-versed in reducing the carbon impact of our projects – both from operational energy as well as embodied carbon.

Having reached many sustainability milestones including one of the first LEED certified project in the world, multiple PHIUS+Source Zero and ILFI Zero Energy projects, and the first verified net zero energy building in Illinois, the natural progression of our practice is to take a proactive and

intentional approach to reducing the embodied carbon in our projects. As an integrated design and delivery firm, we are uniquely positioned to address embodied carbon through both design and construction specifications and processes. Led by our structural engineering team, we intend to continue to learn, grow, and reduce the embodied carbon impact of all of our projects.

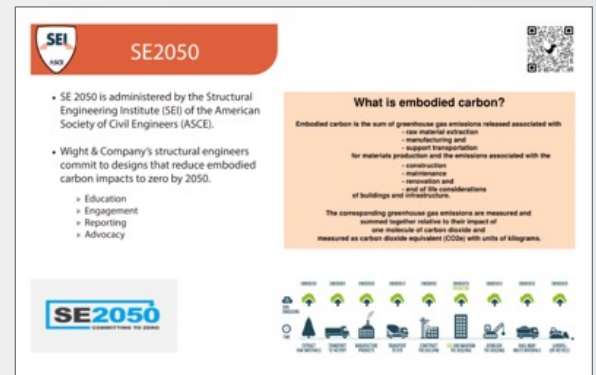
This Embodied Carbon Action Plan is the trail map for our structural engineers, as well as other staff, to understand, reduce, and ultimately eliminate embodied carbon in our projects by 2050.

Education

Understanding the problem and our role in a solution

Distribute firm-wide announcement of your firm's pledge to join the SE 2050 Commitment.

Wight & Company has made public our commitment to SE 2050 through social media posts and internal communications. We regularly share information to reinforce our SE 2050 pledge with staff using multiple mediums and touchpoints including email, weekly announcements, and in-office posters. We will distribute the 2050 Embodied Carbon Action Plan to our structural engineering team when complete.



This poster explaining SE 2050 is among several Wight & Company industry commitments displayed in our office.

Provide a brief narrative describing how your firm is promoting a firm-wide education program for embodied carbon reduction and the firm's commitment to SE 2050

Education of staff is an important element of our commitment to sustainability and carbon reduction. We host regular opportunities for staff to learn about sustainability, with carbon reductions being a major driver. Trainings include internal topical and project presentations, tours of projects, speaker series presentations, and 3rd party vendor lunch n' learns. A sustainability training calendar is maintained by the sustainability team and includes training on embodied carbon and LCA tools.

We are in the process of hiring a staff person to further our research on embodied carbon, training, and project embodied carbon benchmarking

Nominate an Embodied Carbon Reduction Champion for your firm

Matt Aquino PE, SE is Vice President and Director of Building Engineering for Wight & Company. As the leader of our structural design department, Matt serves as a primary champion for Embodied Carbon in the firm. He is supported by John Mlade, Director of Sustainable & Healthy Environments.



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Education (Cont.)

Understanding the problem and our role in a solution

Set a date within the first year to present the “Embodied Carbon 101” webinar to your firm. Include this resource into your orientation/on-boarding programs

Wight & Company will host a viewing of Embodied Carbon 101 that is open to all employees before the end of the 2021 calendar year. All new structural engineers will be required to view the webinar upon joining Wight.

As part of our regular sustainability programming, we are also using other webinars and trainings to elevate our collective understanding around the urgency of operational and embodied carbon reductions.

Minimum (1) additional elective to educate your firm about embodied carbon and a narrative of its significance.*

Wight & Company is committed to reducing carbon in our buildings and meeting our commitment to the SE 2050 to the greatest extent possible. Reflective of our commitment to SE 2050 is our selection of all applicable electives. We anticipate completing each of the electives on an annual basis and intend to maintain momentum moving forward.

We will ensure a minimum of one staff member is engaged with Carbon Leadership Forum (CLF) for quarterly education programs within the first year of our commitment, and that our staff is also participating in the CLF Community Hub.

- Associated resources will be shared amongst the structural team and collaborating team members from other disciplines.
- Our Embodied Carbon team, including all structural engineers and the Wight & Company Director of Sustainable & Healthy Environments, meets every other Friday to share new learnings, case studies, project updates, and other technical resources.
- Our teams currently utilize OneClick LCA, Covetool, and EC3, and have participated in demos of other tools including Tally.

In the summer of 2021, presentation topics to staff included:

- Covetool -Embodied Carbon Module
- AIA 2030 Embodied Carbon Reporting
- Using the EC3 Tool - The Why and How
- Wight Climate Summit (small number of staff from every discipline come together to discuss the urgency surrounding the climate imperative)

ELECTIVES (Min. (1) required, recommended to achieve (4) per year):

- ✓ Have one representative of your firm (any employee) attend quarterly external education programs (e.g. webinar, workshop) provided by SE 2050, [Carbon Leadership Forum](#) (CLF), or other embodied carbon resources.
- ✓ Share the SE 2050 [library of resources](#) with technical staff.
- ✓ Share embodied carbon reduction strategies with your firm as outlined in [Top 10 Carbon Reducing Actions for Structural Engineers](#) document produced by SE 2050.
- ✓ Nominate a minimum of (1) employee per office to participate in a [CLF Community Hub](#) and/or task force.
- ✓ Provide narrative outlining plans for minimum (2) firm-wide presentations per year on the topic of embodied carbon
- ✓ Present the document, “[How to calculate embodied carbon](#)” to all technical staff.
- ✓ Attend a presentation or demo of an LCA-based tool used to calculate embodied carbon.
- ✓ Initiate an embodied carbon interest group within your firm and provide a narrative of their goals.
- ☐ Provide a narrative of how the Embodied Carbon Reduction Champion will engage embodied carbon reduction at each office. (intended for multi-office firms)
- ☐ Other actions you feel appropriate and a narrative for why.

Create a Reporting Plan

Measuring to Manage

Provide a narrative on how your firm plans to measure, track, and report embodied carbon.

As long-time signatories of AIA 2030, Wight & Company has been reporting predicted energy consumption of projects on an annual basis. The AIA 2030 is now also requiring that we collect embodied carbon values. We are in a unique position to report to both AIA 2030 and SE 2050. The SE 2050 reporting will dovetail into our regular AIA 2030 reporting for projects.

Describe the internal training for embodied carbon measurement you provided or will provide.

- Training on One-Click LCA, our current firm software, is provided by One-Click on an annual basis and additional support is provided through staff collaboration.
- Covetool Embodied Carbon module training was provided Q3 2021 and will be revisited periodically.
- Lunch n' Learn opportunities are scheduled as they arise – recent topics included mass timber framing and Carbon Cure for concrete.

Submit project data to the SE 2050 database. See Guidance Document for details.

Wight will report 1 project for 2021, and 2 or more projects in 2022 and moving forward. In a typical year, our structural team works on 3-4 major new construction projects and will focus reporting on these. Major adaptive reuse projects are also of interest, although do not represent a significant amount of the work of our structural team. Other work is more limited in scope and not conducive to reporting.



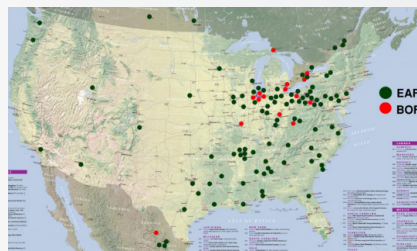
Lincoln School is one of the first LCA studies conducted by our structural engineering group and will be reported to SE 2050.

Embodied Carbon Reduction Strategies

Making a plan to implement

Set an embodied carbon reduction goal for the coming year and an implementation narrative. Qualitative goals focused on education are appropriate for the first year.

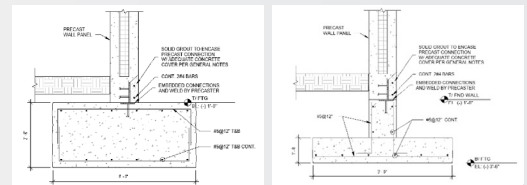
- We are working to include “directional reductions” in our base project specifications including the use of Alternative Cementitious Materials (ACMs) and CO2 infusion.
- We are also researching regional steel manufacturing/fabrication to identify partners that utilize electric arc furnaces as a way for us to reduce emissions of specified products.



Electric Arc Furnaces (EAF) have less than 50% of the emissions of Basic Oxygen Blast Furnaces (BOF). The graphic shows the relative density and location of each type of furnace. 65% of domestic steel is from EAF. Image: source unknown

- In addition to completing our first embodied carbon study, our goal for year 1 is to prove out our specifications on current projects (ensuring there were no hang-ups from contractors) and resolve our questions about steel manufacturing. Parallel to our efforts, our architectural teams are evaluating cladding, windows, and insulation.
- Our specifications currently ask for all project partners, subcontractors and vendors to provide product specific environmental and health documentation, including EPDs. We are connecting with and encouraging local materials suppliers to align with industry needs and develop associated documentation to provide to customers.

- We are working with our architects and designers to program and layout spaces that reduce structural materials quantities.
- Moving forward, the Wight & Company team will more robustly explore reuse strategies including deconstruction and repurposing, reduction strategies through planning & design, optimization, and low carbon materials, and sequestration strategies including the use of CO2 injection into concrete, timber products/wood framing, and other biomaterials.
- Importantly, our early LCA studies will help us define a baseline against which we can compare projects moving forward.



We recently performed an LCA on the foundation system for a warehouse-type facility. Our team compared trench footing (detail on left) with a formed foundation (right) and found that the formed foundation realized a 45% embodied carbon reduction through the use of less concrete and rebar. The formed foundation was more costly due to the additional labor, formwork, multiple pours and backfilling operations, however, the premium was deemed acceptable for the project as a whole.

For second year's ECAP and beyond, provide a narrative about what you have learned about embodied carbon reduction in the past year. Describe successes and misses to help the program improve.

This Wight & Company ECAP is an evolving plan and will be updated as we learn and grow, and the industry continues to develop.

Minimum (1) additional elective you undertook to reduce embodied carbon in your designs, why you chose the elective and its significance.*

Wight & Company will continue to pursue all of the applicable electives proposed by SE 2050.

Advocacy

Building a culture to bring change to the AEC industry

Provide a narrative about how you plan to share knowledge and data to accelerate adoption of embodied carbon reduction.

Wight will report embodied carbon to SE 2050 and AIA 2030 for applicable projects. Our team, apart from sharing information, is a participant in the Chicago Decarbonization Working Group, Chicago Building Decarb Advocacy Group, and also the GSA's Green Building Advisory Committee (GBAC) currently producing a recommendation on decarbonizing the federal portfolio. Our work with local and national organizations will help us leverage influence for smart decarbonization policies.

As our structural engineering team becomes more fluent in embodied carbon modeling, we will expand the group to include additional architects, interior designers, and other disciplines. Wight & Company is uniquely positioned to address carbon from all disciplines and in all stages of design and construction.

As our structural engineering team becomes more fluent in embodied carbon modeling, we will expand the group to include additional architects, interior designers, construction professionals, and other disciplines. As a Design Led-Design Build firm, Wight & Company is uniquely positioned to address carbon across all disciplines and in all stages of design and construction.

We will educate partner design and construction firms on how to reduce embodied carbon in buildings and also our clients on the value of reducing embodied carbon in addition to operational carbon.

Describe what SE 2050 is to clients. At your option, attach any associated marketing materials.

When speaking to clients, the conversation is more fully about sustainable and healthy design. As an integrated firm, our architects are able to support the SE 2050 banner as it closely relates to other sustainability commitments our firm has made including Architecture 2030 and AIA Materials Commitment. In addition, we have developed the Wight Sustainability Standard, in-house baseline requirements for all projects. Following our in-house standard, Wight considers and implements practices in structural design that are beyond industry standards.

The success of carbon reductions in projects is celebrated in our marketing material, although we are careful not to greenwash our progress. This is a work in progress and we hope to have a clear message to more effectively market this aspect of sustainable design in the coming year.

Declare your firm as a member of the SE 2050 Commitment on boilerplate proposal language.

Wight & Company will include a declaration of our commitment to SE 2050 on associated structural engineering proposals. Depending on the specific project pursuit, we may also leverage this ambitious commitment on our architectural and construction projects.



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