

SE 2050 ECAP Submission Form

Email *

bwhitehurst@clarknexsen.com

Firm Name *

Bethany

Education

The first step to increased engagement within your firm is through education. We all should strive to understand the impacts of our design decisions and their effects on our environment.

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

Completed

Not Completed

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. *

The SE 2050 working group meets monthly to discuss EC topics. Typically one member presents updates or education on a specific topic related to EC, LCA or SE 2050. Members of the firm's sustainability group attend meetings and contribute to the various topics. These meetings are an opportunity to educate our team on embodied carbon topics such as measurement, material specifications, and recent developments in the industry. We share project experience and feedback from clients and contractors. Topics from the SE 2050 meeting are occasionally shared with other disciplines at the monthly Sustainability Roundtable meeting.

The SE 2050 group occasionally shares information and developments to the full structural department during regular "lessons learned" meetings. Relevant issues from our working group meetings are conveyed to the department to educate on embodied carbon and the SE 2050 initiative.

The firm's commitment to SE 2050 is included when sustainability efforts are discussed in company-wide meetings. The company sustainability group educates staff on various topics, including AIA 2030, MEP 2040, SE 2050, and other green-building activities.

Name of Embodied Carbon Champion (Point Person) *

Bethany Whitehurst

Email of Embodied Carbon Champion *

bwhitehurst@clarknexsen.com

Phone number of Embodied Carbon Champion *

7048401383

LinkedIn URL

<https://www.linkedin.com/in/bethany-whitehurst/>

Set a date within the first year to present the “Embodied Carbon 101” Webinar to your firm. *
Incorporate this information into your orientation/on-boarding programs.

- Committed / Completed
- Not Committed / Not Completed

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

- Committed / Completed
- Not Committed / Not Completed

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.
- Provide narrative outlining plans for minimum (2) firm-wide presentations per year on the topic of embodied carbon
- Present the document, "How to measure and report 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.

Elective Narrative (Optional):

External SE 2050 Meeting: Our Embodied Carbon Champion regularly attends the external SE 2050 quarterly meetings to interact with others and exchange ideas on how to better implement embodied carbon reduction on projects.

EC Presentations: As Chair of the Sustainable Design Committee of the Structural Engineers Association of North Carolina, our Embodied Carbon Champion notified the company of two presentations on Embodied Carbon and Circular Construction made available by the Committee. The recordings are available here: https://seaofnc.org/Webinar_Recordings

Interest Group: Our Sustainability Roundtable interest group within our firm incorporates all aspects of sustainability and various disciplines. This meeting allows architects, engineers, and related professionals to share project coordination and work group action updates, propelling the firm closer to our shared sustainability objectives. Members are eager to find out how they can incorporate sustainability on their projects. We encourage them to measure embodied carbon along with the structural engineers.

Reporting

Quality data is essential to making informed decisions and setting important benchmarks and the development of appropriate embodied carbon reduction targets. The SE 2050 database is a central component to building a successful Commitment Program and reaching our collective embodied carbon reduction goals by 2050.

Submit an annual minimum of (2) projects per U.S structural office or (5) total projects for the firm to the SE 2050 Database. *

- Completed
- Committed and on track
- Need help reaching this target
- Not Completed

Number of Projects Reported Last Year (zero in first year)

4

Number of Offices Reporting Last Year (zero in first year)

2

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

Over the last few years, Clark Nexsen has measured the embodied carbon for structural materials, starting to include architectural materials, on a select number of design projects. We collect this information in an internal Project Information Database.

Clark Nexsen uses software such as Tally and EC3, including hand calculations, to measure embodied carbon. We use Revit's Tally plug-in to quantify materials and then at times, take it a step further and upload this information into EC3, adjusting material quantities that did not upload correctly or that were not picked up in Revit, and modifying Environmental Product Declaration (EPD) selections.

At present, our results are mixed, whether they come straight from Tally or EC3, or whether we've taken the time to perform hand calculations to verify material quantities. This year, more of our SE 2050 database results uploaded include the optional itemized material quantities. This was a goal we set for ourselves. We are reviewing our methods for measuring embodied carbon to qualify for a LEED wbLCA point.

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

The Clark Nexsen SE 2050 team has collaborated with our in-house architects and interior designers to calculate embodied carbon on their design components as well, so that we can better quantify embodied carbon. Our SE 2050 Team structural engineers plan to continue working with architects and interior designers to perform wbLCAs together, spreading the knowledge. Our SE 2050 Team also plans to mentor other structural engineers as they perform LCAs for next year's SE 2050 database submission. We would like to create an LCA checklist for engineers to follow to make sure that all materials have been accounted for and their results are reliable.

With the projects where we have performed multi-discipline carbon calculations, we would like to gather those results and present as a pie chart at our Sustainability Roundtable to compare sources of carbon and evaluate where we need improvement.

ELECTIVES (Not required, recommended to achieve (1) per year):

- Submit all projects to the SE 2050 Database
- Meet your target average embodied carbon reduction from the previous year.
- Report a greater percentage of projects than the preceding year.
- For a project submitted to the database, ask the Architect or Owner if the project has a carbon budget or if there are established project sustainability goals at the project kickoff meeting.
- Other actions you feel appropriate and a narrative for why.

Elective Narrative (Optional):

Sustainability Goals: When we discuss sustainability goals with Owners, we are starting to ask about embodied carbon goals. When a project is pursuing a green rating certification, we are encouraging the Architect to choose the whole building Life Cycle Assessment option.

Embodied Carbon Reduction Strategies

Embodied carbon reduction of structural materials is the ultimate goal of the SE 2050 program. As a starting point, you will have access to the SE 2050 project database and Program resources to identify and set strategies. This section also serves to share lessons learned and incite innovation. Demonstrate leadership by not only applying, but developing best practices and actively collaborating with the design community. This is our profession's opportunity to take action and make an impact.

Set an EC reduction goal for the coming year and an implementation narrative (Qualitative goals focused on education are appropriate for the first year) *

We would like to find the right project to perform an embodied carbon intensity bay study at the start of design to evaluate different framing options in the hopes that the least carbon option is chosen.

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.

We want our staff to understand that carbon reduction is a project team effort. Therefore, we have tagged a few of our architects and an interior designer to calculate EC on project with us so that more staff learns this process. We are able to compare the EC of the structure, envelope, and interiors as well as operation carbon. One of our architects had success using AI to search specifications for inputting material data into Tally. We are in search of other ways to make EC calculations more automated. We understand the importance of developing a standardized method for calculating embodied carbon. We would like to find a simple method that is easy for engineers and architects to use so that our results are reliable. As we run our embodied carbon calculations from year-to-year, our process improves, recognizing inconsistencies between LCA software and further carbon accounting of elements not picked up in Revit. Ensuring EC calculations are consistent from project to project is critical to obtaining useful data.

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

- Committed / Completed
- Not Committed / Not Completed

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

- Incorporate data visualization into your ECAP. How are you looking at data to make informed design decisions and communicate design options to your clients?
- Provide a project case study in your ECAP that captures a reduction of embodied carbon or some lessons learned.
- Create a project-specific embodied carbon reduction plan.
- Complete a system embodied carbon design comparison study during the project concept phase.
- Participate in a project LEED design charrette and speak to potential design considerations impacting embodied carbon.
- Calculate your firm average benchmark for embodied carbon.
- Update your specifications and incorporate embodied carbon performance. Include embodied carbon in your submittal review requirements.
- Collaborate with your concrete supplier to reduce embodied carbon in a mix design.
- Work with a contractor during material procurement to meet an embodied carbon performance criteria on at least (1) project.
- Have an Environmental Product Declaration (EPD) created as a result of a project.
- Incorporate biogenic materials on at least one project annually.
- Provide a narrative of how circular economy has been used on your projects. Incorporate re-use or design for deconstruction into at least one project.
- Quantify construction waste reduction on a project and the impact to embodied carbon.
- Integrate embodied carbon mitigation strategies in your General Notes.
- Other actions you feel appropriate and a narrative for why.

Elective Narrative (Optional):

Project Lessons: We designed a complete thermal break on a brick shelf angle that used a thermal break pad. Our energy model used this detail to demonstrate an operational carbon reduction. We also designed a frost-protected shallow foundation according to ASCE 32 to reduce the amount of concrete in the foundation, as with this system, the footings would not need to extend below the frost line.

LEED Project: With our building LCA experience we have gained since participating in the SE 2050 Challenge, we are in the process of performing a whole building Life Cycle Assessment on a project for 1 LEED point with our in-house architect.

Specification Update: We have updated our concrete, rebar, structural steel, steel deck, and masonry specifications as new guidance is released, and we have implemented them on a few projects. We have requested low EC materials or given the freedom to make sustainable choices, but have not yet demanded that an EC budget be met on any project.

Advocacy

True change can only come with industry-wide adoption. This section recognizes that our impact reaches beyond any one firm. Plan opportunities to share your experience and knowledge within your firm, with your design community, and beyond. Host a webinar or lunch 'n learn, attend a conference, connect with the SEI Sustainability Committee, or reach out to manufacturers and policy-makers.

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

Our SE 2050 Champion, Bethany Whitehurst, is speaking at the 2024 USGBC Carolinas Women in Green event on reducing embodied carbon in structures. She also plans to team with our in-house Building Science Practice Leader to speak on engineering team coordination to reduce carbon in structures. She founded and chaired the Sustainable Design Committee with the Structural Engineers Association of North Carolina for 2 1/2 years and continues researching and discussing topics with other Committee Members at monthly meetings. This research is documented in meeting notes and posted to a shared site for other Sustainable Design Committee leaders to build upon with their state Committees. Bethany contacts firms who recently joined the SE 2050 challenge in NC to invite them to join the Committee.

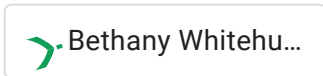
Describe the value of SE 2050 to clients. How can we collaborate to drive adoption? At your option, attach any associated marketing materials. *

As a signatory firm of the AIA 2030, MEP 2040, and SE 2050 Commitments, our disciplines collaborate on a joint Integrated Design Report for our clients that describes how we are fulfilling our Commitments. As an interdisciplinary firm, we have a unique, broad perspective of the total carbon challenge, understanding both operational and embodied carbon sources.

From a structural standpoint, we want building owners to understand the value of the SE 2050 program. Owners can advertise that reducing their Scope 3 Emissions (embodied carbon) is part of their institution's sustainability goals. To promote the significance of lowering embodied carbon, owners can also require that structural engineering firms designing their projects be SE 2050 signatories. Their building's carbon calculation can also contribute to the SE 2050 Database, helping define the national baseline for structural carbon and work toward the goal of zero carbon in structures by the year 2050. They can refer to the SE 2050 website in their marketing materials for a comprehensive explanation of embodied carbon in structures. To summarize our sustainable designs from the previous year and plans for the coming year, Clark Nexsen annually publicizes the Integrated Design Sustainability Report here:

www.clarknexsen.com/publications/

Optional: Upload any documents you would like to exhibit.



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

- Committed / Completed
- Not Committed / Not Completed

ELECTIVES (Not required, recommended to achieve (2) per year):

- Share your commitment to SE 2050 on your company website
- Give an external presentation on embodied carbon that demonstrates a project success or lessons learned (Tip: Get connected at a CLF local hub near you!)
- Discuss with the Owner / Client the option of requiring that some of the structural materials come with facility-specific or product-specific EPDs
- Share education opportunities with clients
- Provide a narrative of how you have encouraged industry and policy change incentivizing availability of low-carbon and carbon sequestration materials
- Start an embodied carbon community of practice or mentorship program in your office
- Mentor a firm new to the embodied carbon space
- Other action you feel appropriate and a narrative for why.

Elective Narrative (Optional):

Company Website: We declare our firm as a member of the SE 2050 Commitment on our sustainability web page here: www.clarknexsen.com/sustainability/

External Presentation: Bethany Whitehurst presented with another member of her Sustainable Design Committee to the Professional Engineers of North Carolina (PENC) Charlotte chapter on "Engineering Team Coordination to Reduce Carbon in Structures." This presentation discussed structural engineering collaboration with other disciplines to reduce both operational and embodied carbon and performing total carbon bay studies. Bethany spoke at the USGBC Carolinas Green Gala about fulfilling the SE 2050 Commitment, using a shorter time-frame to measure total carbon to meet AIA 2030, MEP 2040, and SE 2050 deadlines, and the importance of choosing renovation and salvage and reuse of materials. And she spoke at the USGBC Carolinas Women in Green event as a panelist, addressing EC policies, balancing resilience with sustainability, and the need for more engineers to take on climate change.

Mentoring and Engagement: An outside structural engineering firm is joining our monthly SE 2050 meetings. This firm works with our in-house architects and has offices located in states that do not currently have a Sustainable Design Committee with their Structural Engineers Association nor a Carbon Leadership Forum (CLF) Hub in their area where mentoring may be sought. As our architects are working toward AIA 2030 goals, we want to encourage outside firms associated with our projects to be familiar with embodied carbon reduction and help our firm meet sustainability goals on every project. We are sharing knowledge with this structural engineering firm on calculating embodied carbon, carbon reduction strategies, and developing their own sustainable marketing initiatives to support them in joining the SE 2050 Commitment as well. Inviting another firm to our meetings keeps the energy going, committed to discussing new topics at every meeting. The team looks forward to working with other structural engineering firms to exchange ideas on sustainable structural engineering and advance sustainable design in the southeast.

Proposed Advocacy: We recommend that firms start or join the Sustainable Design Committee with their state's Structural Engineers Association. Progress can be made in your state when firms are working together. Find which SE 2050 Signatories have offices with structural engineering in your state that have somebody interested in joining your committee. Once a committee is formed, you can all start to build your knowledge. Collaborate with your local material, code, or deconstruction experts. Find what unique strengths your state possesses on the sustainability front. Which suppliers have product specific EPDs available for local projects? Are there any city or state policies addressing EC? How can a circular economy be created with the resources in your area?

Program Feedback

Please add any comments that you wish to share publicly. The Program Leadership Group is committed to transparently improving SE 2050.

Comments:

Join or start a Sustainable Design Committee with your state's Structural Engineers Association!

This content is neither created nor endorsed by Google.

Google Forms