## SE 2050 EMBODIED CARBON ACTION PLAN 2023



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Building upon a 63-year legacy of positively impacting the world around us through innovative design, SK&A Structural Engineers is honored to support the SE 2050 Challenge in a coordinated industrywide initiative aimed at reducing embodied carbon in the construction industry.

In early 2022 SK&A identified this initiative as an opportunity to make material contributions in the protection of our environment and launched our in-house Embodied Carbon Committee. This committee's immediate directive was to study the national SE 2050 Commitment Program and communicate its mission and vision to firm leadership. In August 2022 SK&A became a signatory of the program, committing our support of substantive embodied carbon reductions in the built environment, and specifically in the design and construction of structural systems by the collective structural engineering profession.

We embrace the vision of the SE 2050 program and recognize our responsibility to understand the impacts of our work on the environment. Several of our recent projects have achieved sustainability goals, including buildings in Washington, DC's Navy Yard and at the Pike and Rose development in North Bethesda, MD. Additionally, our Embodied Carbon Committee actively studies embodied carbon in our work and offers resources and learning opportunities to our staff. SK&A continues to research advances in sustainability practices, materials, and methods, as we strive to serve our clients, deliver on design goals, and positively impact the communities where we live and work.

We look forward to collaborating with other firms in the SE 2050 program as we, together, work towards ever-improving industry best practices in the stewardship and protection of our surrounding communities and the natural environment.

Sincerely, SK&A Structural Engineers

Scott B. Stewart, PE, SE President and Managing Principal





## **About SK&A**

Established in 1963, SK&A Structural Engineers has a long history of providing creative structural engineering solutions for a broad spectrum of high-design projects within the Washington Metropolitan area and beyond. SK&A has had the privilege of designing well over 50 LEED buildings in the last decade. In addition to structural design, SK&A offers a full suite of structural-related consulting services, including repair and restoration, building enclosures and waterproofing, and testing and inspections.

SK&A has offices in Potomac, Maryland and Washington, DC. This region leads in the international effort to "go green," with Washington, DC having been awarded the first "LEED Platinum City" in the world in 2017.



### **Embodied Carbon Committee**

SK&A's Embodied Carbon Committee was formed to study embodied carbon in our work and educate the firm on what we can do to reduce our impact. The members are actively engaged in embodied carbon initiatives, new materials and methods, and broad education that can be used to assist our clients in meeting their goals of reducing embodied carbon in the construction industry.





**Sara Zaman, PE** Embodied Carbon Reduction Champion and Project Manager

James Chavin-Grant, PE, SE, CDT SK&A Committee Lead and Project Manager



Ahmed Al Rahmani, PhD, PE Assistant Project Manager



Hakan Onel, PE, SE Senior Principal



Scott Kabat, PE Associate



Zachary Shugart, EIT Structural Engineer II



Josh Woolcock, PE, LEED AP Principal







### **Education Plan**

As structural engineers, embodied carbon has historically been present in most of the structures we have designed. It is imperative that we understand what embodied carbon is and ways that we can contribute to reducing its levels in our current and future projects.

In this first year of our firm's participation in an embodied carbon reduction initiative, we are focusing on a basic education about the fundamental concepts. At the time of publishing this Embodied Carbon Action Plan (ECAP), a series of company-wide seminars, as listed below, have already been presented to the firm and will be repeated in future years:

- A Lunch-and-Learn meeting to cover our participation in the SE 2050 Commitment Program and the fundamentals of embodied carbon.
- A seminar to educate the firm on the basics of a life cycle assessment.
- A session covering type IL cement and CarbonCure, with the understanding that these are becoming common in our projects.

In the future, these fundamental seminars will be given annually, or more often, as needed. A library of recorded content is available to all staff and will be periodically updated with fresh content from internal and external resources.

Other procedures are being updated to promote acceptance and understanding of this initiative, as well. The onboarding of new hires will include a briefing on our ECAP progress and goals, and the short educational feature called "Embodied Carbon Corner" will continue to be shared in the firm's monthly internal newsletter, *The News Roundup*. Lastly, representatives of the firm will participate in organizations such as the *Carbon Leadership Forum*.



### **Knowledge Sharing**

A vital component of the SE 2050 Challenge is knowledge sharing. As such, we will aim to provide at least one seminar per year to an outside organization or group. This past year, we presented a well-received webinar entitled *The Transition to Net-Zero* to the AIA-DC chapter. We will also reach out to a broader audience by sharing pertinent information, such as lessons learned and project highlights, on our company website and LinkedIn page.

## Reporting

SE 2050 has started a central database to collect pertinent data about completed projects. This data will be used to set benchmarks and establish industry targets. Currently, generalized baselines exist but more specificity is needed. To collect the necessary data, SE 2050 Signatory Firms are required to submit reports on embodied carbon measurements for two or more of their projects.

SK&A will submit data for at least four of our projects to this database in the first year. An additional two life cycle analyses will be done internally to bolster our data and assist in staff training. In the future, a firm-wide database will be created for local comparison.



## Reduction

SK&A intends to take a multi-pronged approach to reducing embodied carbon in our work. When appropriate, a wood structural system will be proposed as an option. We will also study the effects of different framing systems and column spacings to give ourselves and our clients an idea of where "carbon savings" may be found. It will be vital that these discussions happen early in the design phase.

In an effort to build our internal resources, we will start requiring submissions of environmental product declarations (EPDs) in our specifications. These will be used to develop an in-house baseline of standardized embodied carbon quantities for the types of buildings that we typically design.

### **Advocacy**

Without advocacy, the movement towards net zero embodied carbon will not go far. A limited number of industry participants will not be able to make the necessary impact. Rather, the entire design and development team must share the same goals.

SK&A will encourage our clients to pursue options that inherently have less embodied carbon. This may be as simple as smaller and more consistent column bays or to suggest wood framing or adaptive reuse where possible. Oftentimes we, as structural engineers, find it simpler to suggest complete demolition and rebuilding rather than strengthening an existing building. Going forward, whenever possible, our project proposals will provide options with lower embodied carbon potential, such as those listed above.

Following the announcement of our acceptance of the SE 2050 challenge, we presented on the subject at the AIA-DC *DesignDC* symposium. We plan to pursue additional opportunities to present to architects and other structural engineers.

### **Lessons Learned**

The most significant "lesson learned" in this first year is that there is still much more to learn. Topics ranging from innovative products and creative solutions to the basics of embodied carbon are new to many in our firm. With so much opportunity for growth in this area, the future is bright, and we look forward to expanding our knowledge base while advancing the goals of reducing embodied carbon in our work.





### **Contact Us**

Global concern over climate change is one of the most important issues of our time and structural engineers can play a key part in reducing emissions into our environment. SK&A is pleased to be able to actively contribute to the protection of our natural environment through our ongoing commitment to SE 2050, our continued work within our Embodied Carbon Committee, and providing resources to our clients.

The SK&A team members assisting with the SE 2050 initiative include Sara Zaman, James Chavin-Grant, Hakan Onel, and Josh Woolcock. Please do not hesitate to reach out to them to learn more.

#### Sara Zaman, PE

Embodied Carbon Reduction Champion and Project Manager saraz@skaengineers.com

#### James Chavin-Grant, PE, SE, CDT

SK&A Committee Lead and Project Manager jamesg@skaengineers.com

#### **SK&A** Embodied Carbon Action Plan

#### Hakan Onel, PE, SE

Senior Principal hakano@skaengineers.com

#### Josh Woolcock, PE, LEED AP

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#### Appendix A: SE 2050 Commitment Letter

## SK&A

August 16, 2022

Laura Champion, Managing Director Structural Engineering Institute 1801 Alexander Bell Drive Reston, VA 20191

RE: Letter of Commitment to the SE 2050 Program

Dear Laura:

SK&A Structural Engineers, a 94-person firm with offices in Potomac, Maryland, and Washington, DC, 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.

The building industry is one of the largest contributors to climate change. Given the environmental benefits to committing to this program, we are motivated to build our firm's sustainability practices and promote active measures to alleviate the effects of global warming.

We therefore commit SK&A to take the following steps which are part of the SE 2050 Commitment Program:

- Within six months and annually henceforth, we commit to reporting an Embodied Carbon Action Plan (ECAP) and permit the ECAP document or form 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 appreciate the opportunity to join this industry effort to achieve the goals of the SE 2050 Program.

Sincerely, SK&A Structural Engineers

Scott B. Stewart, PE, SE Managing Principal

SK&A Structural Engineers

Potomac, MD • Washington, DC

#### Appendix B: Internal Announcement

# SK&A®

#### SK&A Commits to the SE2050 Challenge

Hello All,

We are pleased to formally announce that SK&A has joined the SE2050 Challenge. The SE2050 Challenge was issued in 2019 by the <u>Carbon Leadership Forum</u>, and in response, the Sustainability Committee of the ASCE Structural Engineering Institute developed the <u>SE2050 Commitment Program</u>. This initiative is designed to encourage substantive embodied carbon reductions in the design and construction of structural systems by the collective structural engineering profession.

While SK&A's commitment to this specific program is new, our involvement in sustainable design is not. Several of our projects within recent years have demonstrated our contribution to this effort, including a few buildings in the Navy Yard and at Pike and Rose.



SK&A's staff spearheading this effort include James Grant, PE, SE, CDT, Sara Zaman, PE, Hakan Onel, PE, SE, and Josh Woolcock, PE, LEED AP. The next steps for our team will involve creating an *Embodied Carbon Action Plan* and providing education to staff. Future requirements in this program include implementation through specification of low carbon materials and sharing data to a central program database.

If you would like to learn more or are interested in getting more directly involved in SK&A's SE2050 program, please contact <u>James</u> or <u>Sara</u>.



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