

SMITHGROUP

COMMITMENT TO CLIMATE ACTION

**SE 2050
EMBODIED CARBON ACTION PLAN**

SMITHGROUP



DESIGN A SUSTAINABLE FUTURE:

ADAPTION & MITIGATION

SmithGroup has been a leader in sustainable design since the term was first coined, recognizing that as planners and designers of the built environment, we have responsibility as well as opportunity to mitigate and adapt to the worst impacts of climate change. In 2007, we adopted the 2030 Challenge committing to pursue progressive energy targets across our practice to achieve net-zero energy design by 2030. While we have made strides, we realize that 2030 is imminent and there is a deep need for increased progress and leadership to help us meet this critical time-frame.

We must rethink how we are addressing climate change because we are in the midst of an urgent and growing climate crisis. Annual global temperature is about 1°C hotter than pre-industrial levels, resulting in devastating impacts across the planet. Scientists have confirmed that at our current pace, the world could be 1.5°C hotter by 2030—the difference between life and death for thousands of people, often our most vulnerable communities. To stay under 1.5°C, the world must cut carbon emissions in half and transition to renewable energy in this decade. We need aggressive actions beyond our existing commitments to avoid these catastrophic impacts.

The adverse effects of an already altered climate continue to intensify—from unprecedented heat waves, droughts, and wildfires to increased flooding, coastal erosion and habitat loss. These shocks are having a growing impact on the communities we work with, economically, environmentally, and socially. In addition to reducing carbon emissions, our design work must help our communities become more resilient to climate impacts.

The global COVID-19 pandemic shows that our risks are not isolated solely to the environment, nor can they be disconnected from pre-existing systems which have resulted in compounded inequity. This epidemiological crisis has had a disproportionate impact on our most vulnerable and disadvantaged communities. The link between poverty, health, and climate resilience is undeniable, and only stands to worsen as secure food, water, and energy supplies become harder to sustain. We cannot afford the human, ecological, and economic costs of being unprepared for these impacts. By establishing an intersectional framework of equitable planning and design decisions, and advancing climate adaptation and resilience, we can increase the capacity of our cities, institutional systems, and infrastructure to better withstand and recover from the shocks and disruptions we are experiencing globally.

If current trends continue, embodied carbon—the emissions from extracting, manufacturing, transporting, installing, and demolishing building and construction materials—will account for 60% of the world's carbon budget by 2050. SmithGroup will expand our firm's and our industry's focus beyond operational carbon to address and mitigate the full carbon footprint of our designs.

While the climate crisis is enormous, the construction and operation of buildings and the built environment accounts for nearly 40% of global carbon emissions.¹ The impact we can have as a firm and profession is tremendous. Designing a carbon-free and more resilient future will require leadership from every employee within our firm. SmithGroup is committed to rise to this challenge, leveraging our passion for innovation and our multi-disciplinary structure to advance climate mitigation and adaptation in all our work.

¹UNEP and IEA, "Global Status Report 2017: Towards a Zero-Emission, Efficient, and Resilient Buildings and Construction Sector," 2017

CLIMATE ACTION:

TAKING ACTION:

With the world facing an urgent climate crisis, SmithGroup has deepened our commitment to climate action. 2030 remains a pivotal year in global carbon reductions for a measurable reason: designing and building as usual will take us past critical emission thresholds and worsen climate change impacts. SmithGroup is committed to meeting these challenges through bold, transformational changes in how we design, construct and advocate for the built and natural environments. We are leveraging our passion for innovation and integrated design to make more decarbonization and adaptation progress faster and to make sure our climate action efforts holistically serve our communities, businesses and institutions.

OUR THREE PRIORITIES

1. Accelerate Gains in Operational Performance

The construction and operation of buildings and the built environment account for nearly 40% of global carbon emissions. SmithGroup is leveraging an innovative performance-based design workflow, applying cutting-edge technology and advanced computational modeling techniques to achieve net-zero energy design for all our active projects by the end of the decade.

2. Reduce Life-Cycle Carbon Emissions

If current trends continue, embodied carbon (the emissions from extracting, manufacturing, transporting, installing, and demolishing building and construction materials) will account for 60% of global carbon emissions by 2050. SmithGroup is helping to expand our industry's focus on addressing the full life-cycle carbon footprint of our designs, by fostering transitional approaches to circular and living systems of economy and scale.

3. Increase Community Well-Being Through Resilient Design

The adverse effects of an already altered climate continue to intensify—from unprecedented heat waves, droughts, and wildfires to catastrophic flooding and habitat loss. These shocks and stresses are having a growing impact on our communities – with an undeniable link between poverty, health, and climate vulnerabilities. SmithGroup seeks to emphasize an intersectional framework for resilient and equitable design decisions – managing our clients' risk while enhancing community well-being and livability.



PERFORMANCE ANALYTICS & CLIMATE-IMPACT TEAM (PACT)

We have created a new Performance Analytics & Climate-Impact Team (PACT) that is a national group of experts advancing parametric modeling and analysis, quantified performance evaluation and an integrated design workflow. Our firm's signature on AIA 2030, MEP 2040, SE 2050 and other industry climate commitments represents a shared promise to our peers and our clients.

PACT is advancing the speed and rigor with which we can meet those commitments by defining the leading edge of net-zero strategy and design. PACT's core focus is applying data solutions to the design space, including automating workflows to provide rapid-paced impact analysis. The team also uses this analysis to provide decarbonization and resilience solutions at a comprehensive range of scales. Their work leverages large-scale datasets that encompass single buildings and sites as well as districts, campuses, cities, utilities, and clients with national portfolio holdings. Team leaders are also actively engaged in research and policy collaborations.

CHAMPIONING THE WAY TO REDUCING EMBODIED CARBON:

EMBODIED CARBON TASK FORCE

To focus specifically on lowering embodied carbon, we have create a dedicated task force. Our Embodied Carbon task force is co-led by Greg Mella and Andrea Reynolds. The members of the Embodied Carbon task force represent a wide range of disciplines. The first step our task force took on was to strategize on a holistic and integrated approach to reducing Embodied Carbon. We also signed onto the SE 2050 Commitment and the MEP 2040 challenge. Our commitment to these programs, on top of previously signing onto the AIA 2030 Commitment and participating in the Landscape Architecture Foundation’s Green New Deal Superstudio holds us accountable while striving to achieve the aggressive goals necessary to help us achieve neutrality.



Greg Mella
Co-chair

Andrea Reynolds
Co-chair

Chris Heine

Eva Koester

Dan Kinkead

Stet Sanborn

Architecture,
Sustainability

Structural
Engineering

Architecture

Sites / Civil

Urban
Design

Mechanical
Engineering

We are excited to leverage our passion for innovation and multi-disciplinary structure to advance climate mitigation. Our architects have supported the AIA 2030 Commitment program for over a decade and have found the structure and rigor of that program valuable as we work towards carbon neutrality. We are excited for SE 2050 to bring a similar approach to the structural engineering of our projects, as well as, to MEP 2040.

We have identified [Andrea Reynolds](#), to be our Embodied Carbon Reduction Champion for the SE 2050 Commitment. Andrea is our Director of Structural Engineering. She has experience in the design of a variety of structural materials and for a diverse mix of clients and building types. She is a member of the ASCE/SEI Sustainability Committee and is the co-chair of our Embodied Carbon Task Force.

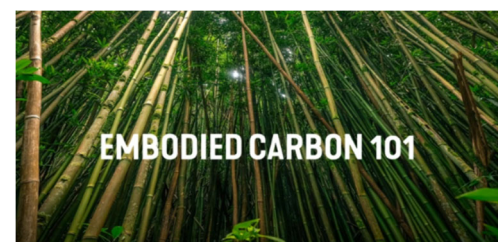
Our task force meets bi-weekly to set goals, identify opportunities for design/research, education, and advocacy. The task force also maintains our ECAP and tracks our progress with respect to our goals.

SE 2050 ECAP: EDUCATION

EMBODIED CARBON EDUCATION

We believe that the first step towards engaging our staff in reducing embodied carbon is through education. Embodied carbon is a less familiar topic to most of our staff, compared to their understanding of operational energy use. Education is critical to expand our understanding of how our designers can reduce embodied carbon's contribution to the climate emergency. We strive to be a learning organization and provide a wide range of education opportunities and resources to help us all to understand the impacts of our design decisions and their effects on our environment. Some of the resources that we have provided to educate our staff include the following:

- Microsoft Teams – We utilize a Sustainability Team with a channel dedicated to Embodied Carbon to share resources. These resources include the SE 2050 library of resources and the *Top 10 Carbon Reducing Actions for Structural Engineers*.
- Embodied Carbon 101 – we held 2 live sessions of a presentation that we created, with plans to update and host more live sessions this year. These sessions were recorded and are available to all staff on our education portal (InKNOWvations). The Embodied Carbon 101 recording has been added to our onboarding task for new structural hires.
- Climate Central – our Climate Action Committee has created a hub that is available on every employee's home page. This hub helps staff find all resources, education, tools, data, reporting, etc. related to the climate action.
- InKNOWvations – in addition to Embodied Carbon 101 we have created several courses in our internal learning platform regarding Low Carbon Concrete Design and Specifications, Building Life Cycle Assessment: One Click LCA, Portland Limestone Cement, and Reducing the Carbon Footprint of Concrete with CarbonCure. We will be adding a new series this year focused on Mass Timber.
- < 20's – we have created a short video about using the Carbon Designer tool and One Click LCA that are available to all staff in our <20 video series for short learning burst. We will be developing additional <20's related to Embodied Carbon.
- One Click LCA – we have provided training for One Click LCA to create a team of users throughout the company. This team meets regularly to share lessons learned and identify additional training needs.
- Muse – is a collection of content for a variety of project knowledge-based resources, including A3s, TechBriefs, and “short stories”. Content related to sustainability and reducing EC is constantly being added including a 3 part series our Boston office did related to Embodied Carbon.



SE 2050 ECAP: REPORTING

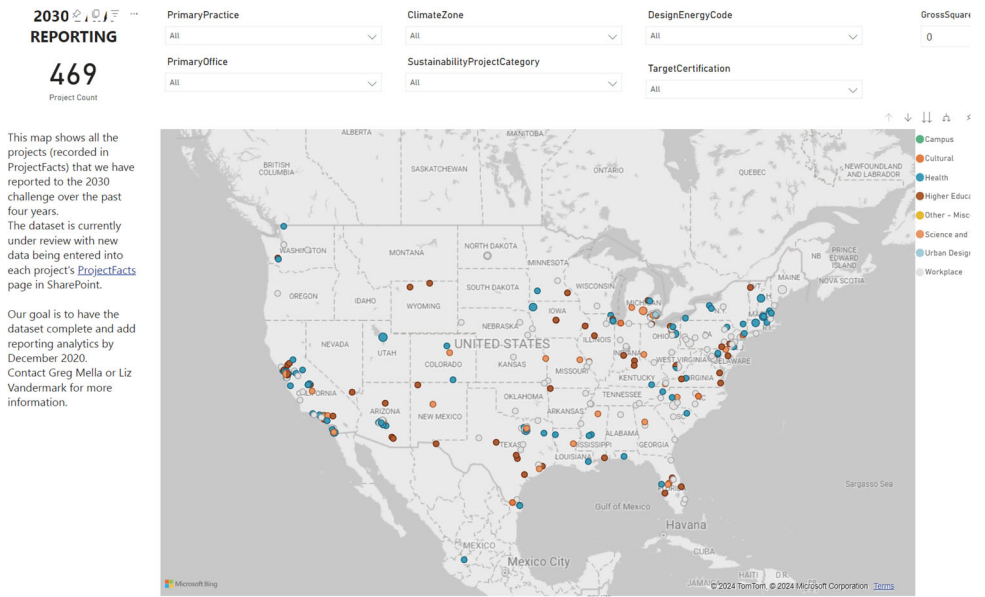
- Presentations, case studies, and workshops highlighting Embodied Carbon and adaptive reuse have been included in our annual Earth Day and Design Week activities including *Decarbonization by Design*.
- Most of our offices conduct regular sustainability forums to discuss issues of sustainability related to project work, office operations, etc.
- Multiple staff have participated in national the Mass Timber Conference, Greenbuild, etc. as well as, many other national, regional and local sustainability related events.

EMBODIED CARBON REPORTING

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.

We have and will continue to projects into the SE 2050 database from each of our offices that have structural engineers (Detroit and Chicago). We have primarily been using One Click LCA to calculate the embodied carbon, supplemented with ECOM,- Embodied Carbon Estimator, and other available tools as required. We have used these analyses to inform our design and Revit modeling procedures, templates, and standards to facilitate the determination of the embodied carbon of our structural systems.

We continue to build a database of our projects internally that can be illustrated in a dashboard on our Climate Center and used for benchmarking purposes. We are working to currently working to expand our AIA 2030 internal dashboards to include SE 2050 and MEP 2040 data.



This map shows all the projects (recorded in ProjectFacts) that we have reported to the 2030 challenge over the past four years. The dataset is currently under review with new data being entered into each project's ProjectFacts page in SharePoint. Our goal is to have the dataset complete and add reporting analytics by December 2020. Contact Greg Mella or Liz Vandermark for more information.

SE 2050 ECAP:
REDUCTION STRATEGIES

EMBODIED CARBON REDUCTION STRATEGIES

We have established and implemented strategies to achieve the goal of reducing the embodied carbon of structural materials. We continue to develop best practices and actively collaborate with the design community. Our Embodied Carbon task force has been collecting and sharing resources, brainstorming on how we can improve our processes. We are actively developing workplans, workflows, and guides to further help our project teams incorporate strategies to reduce carbon on their projects.

Piloting the Way

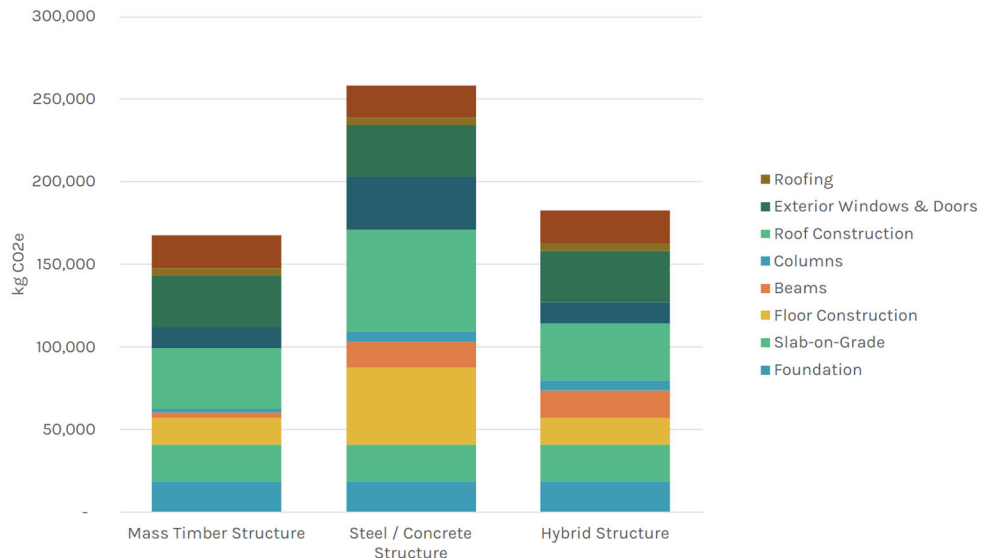
To kickoff our focus on the reduction of Embodied Carbon and broaden our knowledge in conducting LCA's, we reached out to create a team throughout all of our offices. This team and the team conducted pilot exercises on projects in each of their offices to consider how we can incorporate Embodied Carbon reductions in project pursuits and system selections. The team was also trained in using One Click LCA. For pilots that were more complete, One Click LCA was used to calculate the Embodied Carbon. And team conducting the pilot projects collaborated regularly to share their findings. They also collaborated with contractors to identify opportunities to reduce Embodied Carbon (I.E. concrete mix designs).

The pilot projects helped build our knowledge and proficiency with using One Click LCA and have led to modifications to our Revit standard templates and design process to facilitate reporting on more of our projects. Further, as our PACT studio has been established, we have been growing our staff to include those with roles dedicated to performing LCA's and assisting our project teams,

Designing Our Process

Our project design process includes a Discovery Sprint - a multi-step, cross-discipline, integrated design charette with the aim of creating sustainable and resilient solutions based on the ten principals of the AIA Framework for Design Excellence. We begin our projects considering the impacts that structural materials selections have on Embodied Carbon.

IMPACTS OF STRUCTURAL FRAME ON OVERALL EMBODIED CARBON



As our design progress we have implemented strategies to include the consideration for Embodied Carbon in more detailed decisions related to framing configurations and structural system refinement. We are working to build our resources to enable all our engineers to consider Embodied Carbon, just as we consider loading, fire ratings, vibration, etc.

Levels 2 North Area		Steel			Metal Deck				Concrete Slab				Total lb CO2e/sf	
Combination	Description	Camber (in)	Steel Takeoff (lbs)	Steel Studs (lf)	Deck Depth (in)	Deck Gage	Deck Weight (psf)	Decking Takeoff (lbs)	NW or LW	Concrete Thickness (in)	Concrete Volume (yd ³ / 100 ft ²)	Concrete Volume (ft ³ / ft ²)		Concrete Takeoff (ft ³)
2	CS2 - 4.5 LW 20 / EW C	0	18213	344	2	20	1.9	4430.8	LW	2.5	1.08	0.292	680.01	27.5
4	CS2 - 4.5 LW 20 / NS C	0	15908	360	2	20	1.9	4430.8	LW	2.5	1.08	0.292	680.01	26.4
6	CS2 - 4.5 LW 18 / EW C	0	18213	344	2	18	2.5	5830	LW	2.5	1.08	0.292	680.01	29.1
8	CS2 - 4.5 LW 18 / NS C	0	15908	366	2	18	2.5	5830	LW	2.5	1.08	0.292	680.01	28.0
26	CS2 - 5.5 NW 20 / EW C	0	17905	456	2	20	1.9	4430.8	NW	3.5	1.39	0.375	875.20	28.8
28	CS2 - 5.5 NW 20 / NS C	0	16758	364	2	20	1.9	4430.8	NW	3.5	1.39	0.375	875.20	28.3
30	CS2 - 5.5 NW 18 / EW C	0	16423	396	2	18	2.5	5830	NW	3.5	1.39	0.375	875.20	29.6
32	CS2 - 5.5 NW 18 / NS C	0	15612	326	2	18	2.5	5830	NW	3.5	1.39	0.375	875.20	29.2
34	CS2 - 5.25 LW 20 / EW C	0	18593	552	2	20	1.9	4430.8	LW	3.25	1.31	0.354	824.83	29.4
36	CS2 - 5.25 LW 20 / NS C	0	15435	346	2	20	1.9	4430.8	LW	3.25	1.31	0.354	824.83	27.9
38	CS2 - 5.25 LW 18 / EW C	0	18213	392	2	18	2.5	5830	LW	3.25	1.31	0.354	824.83	30.8
52	CS3 - 5.5 LW 20 / NS C	0	15054	354		20	2.1	4897.2	LW	2.5	1.23	0.332	774.46	27.6
56	CS3 - 5.5 LW 18 / NS C	0	15054	358	3	18	2.7	6296.4	LW	2.5	1.23	0.332	774.46	29.3
76	CS3 - 6.5 NW 20 / NS C	0	15612	356	3	20	2.1	4897.2	NW	3.5	1.54	0.416	969.65	29.1
80	CS3 - 6.5 NW 18 / NS C	0	15612	384	3	18	2.7	6296.4	NW	3.5	1.54	0.416	969.65	30.8
84	CS3 - 6.25 LW 20 / NS C	0	15054	390	3	20	2.1	4897.2	LW	3.25	1.47	0.397	925.57	29.3
88	CS3 - 6.25 LW 18 / NS C	0	15134	378	3	18	2.7	6296.4	LW	3.25	1.47	0.397	925.57	31.1
108	CS2 - 6.5 NW 20 / NS C	0	17233	416	2	20	1.9	4430.8	NW	4.5	1.7	0.459	1070.39	30.3
112	CS2 - 6.5 NW 18 / NS C	0	16712	388	2	18	2.5	5830	NW	4.5	1.7	0.459	1070.39	31.6
124	CS3 - 7.5 NW 20 / NS C	0	16887	348	3	20	2.1	4897.2	NW	4.5	1.85	0.500	1164.83	31.5
128	CS3 - 7.5 NW 18 / NS C	0	16899	360	3	18	2.7	6296.4	NW	4.5	1.85	0.500	1164.83	33.3

Setting New Standards

As we incorporate new strategies into our project documentation standards we began where we could make the biggest impact, our concrete specifications. Our structural cast-in-place concrete specification sections have always encouraged replacement of cement with more sustainable options, but we have recently completed updates to our specification language to for structural cast-in-place concrete and concrete paving sections to require rather than recommend sustainable cement options. Our updates to the concrete specifications also included language to increase the recycled content of rebar, utilize recycled water and 56-56 day concrete, allow/encourage carbon dioxide mineralization products, etc. to further reduce the Embodied Carbon of the concrete work on our projects.

Through the process we tested preliminary language on select projects for confirmation before implementing the final edits to be applied to all projects. We also worked with contractors and suppliers for feedback to improve the modifications to our specifications. We started with the 2 most commonly used concrete sections and will be extending this same language to the other concrete sections in our library (architectural, civil, and landscape concrete sections).

Beyond our concrete specifications we have updated other master specifications with language requiring Environmental Product Declarations (EPDs) for critical components. We will be making further updates to other master specifications for strategies to reduce Embodied Carbon and broaden our library to include additional sections related to Mass Timber.

SE 2050 ECAP:

EDUCATE, REPORTE,
STRATEGIZE,
ADVOCATE

EMBODIED CARBON REDUCTION ADVOCACY

True change can only come with industry-wide adoption. We understand that our impact reaches beyond our firm. We are always seeking opportunities to share our experience and knowledge within our firm, with our clients and contractors, with the design community, and beyond.

We have included our Climate Action Statement on our outward facing website and regularly add perspectives on climate action, embodied carbon, and designing a carbon-positive future. To engage our clients, we regularly conduct sustainability workshops on active projects and in advisory boards. We are working to develop a business case related to climate action to further engage more of our clients and potential clients.

To engage the industry, we have several people that participate in various sustainability related committees and efforts and our SE 2050 Embodied Carbon recently joined the ASCE/SEI sustainability committee. We have also been encouraging our teams to reach out to structural consultants that we work with to encourage them to also sign onto the SE 2050 and MEP 2040.

We have shared many of the presentations that we have developed regarding sustainability and embodied carbon to a wider audience at regional and local AIA, Michigan Mass Timber, etc. The most recent event included Embodied Carbon 101 to the Structural Engineering Association of Michigan (SEAMi) and are planning a follow up presentation to dive into more detail. We are working to establish a sustainability committee within the organization to engage other structural engineers in Michigan in joining efforts to reduce embodied carbon.

See the SG Embodied Carbon Action Plan Checklist on subsequent pages for additional information.

CASE STUDY: ADAPTIVE RE-USE

Our efforts to reduce Embodied Carbon extend beyond considerations for new projects and structural systems, to also consider the potential for adaptive reuse and redevelopment. Recently, SmithGroup led an Adaptive Reuse and Redevelopment Plan to develop a comprehensive strategy to preserve and adaptively reutilize an existing 500,000 sf terminal, as well as a framework plan to create catalytic and supportive relationships between the Terminal and the surrounding district and neighborhood.





To do this, the SmithGroup team developed an interconnected plan that links desired objectives from the neighborhood (composed of African Americans, Bangladeshi immigrants, and historic Polish populations) with programming and development strategies at the Terminal to ensure mutually beneficial outcomes. By carefully programming the Terminal to complement neighborhood's needs, as well as critical adaptive reuse efforts, preservation objectives, and development strategies for the building's owners and funders, the SmithGroup team established an overarching step by step phasing and action strategy to build up a value proposition to investors, neighborhood residents and district merchants.

At each step of the way, the Terminal adaptive reuse effort moves from early activation with placemaking components, to condition assessments to identify necessary rehabilitation, identifying larger internal updates at the main concourse level to create a 'civic commons', and then on to reuse of upper levels of the tower and other components of the station and site. Through these steps the Terminal is now poised to engage investors, tenants, adjacent residents and key city and county leaders.

EDUCATION

We believe that the first step towards engaging our staff in reducing embodied carbon is through education. We strive to be a learning organization and provide a wide range of education opportunities and resources to help us all to understand the impacts of our design decisions and their effects on our environment.

REQUIREMENTS:

Status	Requirement	Implementation
	Distribute firm-wide announcement of firm's pledge to join the SE 2050 Commitment. After the first year, make an announcement sharing your ECAP from the previous year.	Firmwide announcement was sent to all staff on October 10, 2021. Announcement was also included in a company-wide Engineering Discipline Newsletter on October 20, 2021 and in our 2021 year-end presentation "SmithGroup LIVE: Living Our Purpose", February 10, 2022. Commitment was also shared with all structural engineering staff.
	Provide a brief narrative promoting a firm-wide education program for EC reduction and the firm's commitment to SE 2050.	SmithGroup (SG) has various levels of education and resources available as described in the Education portion of the ECAP. An series of EC educational sessions are being planned for 2023.
	Nominate an Embodied Carbon Reduction Champion for the firm. Include a brief profile in ECAP.	SG has nominated Andrea Reynolds to be our Embodied Carbon Reduction Champion. We have a multi-disciplinary EC task force, and discipline-focused groups to work towards reducing EC.
	Set a date within the first year to present an "Embodied Carbon 101" Webinar to the firm.	SG's "Embodied Carbon 101" was presented firmwide on November 17 and 19, 2021. A recording has been posted to our InKNOWvations learning portal and is available to all staff. Onboarding process for all structural engineering staff has been updated to require "Embodied Carbon 101" for all new hires. A discipline-specific virtual presentation was made to all structural engineering staff.











Item has been completed



Item in process

ELECTIVES:




(1 required, 4 recommended per year)



Status	Elective	Implementation
	Have one representative of the firm attend quarterly external education programs (E.G. webinar, workshop) provided by SE 2050, Carbon Leadership Forum (CLF) or other EC resources.	
	Share SE 2050 library of resources with technical staff.	Our SG - Sustainability site contains resources available to all staff and these were highlighted in Embodied Carbon 101 webinar. Available resources shall be enhanced by our Climate Central.
	Share EC reduction strategies as outlined in Top 10 Carbon Reducing Actions for Structural Engineers document produced by SE 2050.	This has been made available to all staff on our SG - Sustainability site. Strategies for reducing EC were included in Embodied Carbon 101 webinar.
	Nominate a minimum of one employee per office to participate in a CLF Community Hub and/or task force.	
	Provide narrative outlining plans for minimum of two firm-wide presentations per year on the topic of EC.	We have presented and recorded Low Carbon Concrete Design and Specifications, Building Life Cycle Assessment: One Click LCA, Portland Limestone Cement, and Reducing the Carbon Footprint of Concrete with CarbonCure in addition to several other more information educational sessions. In 2024 we will be conducting a series of presentations related to Mass Timber.
	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 EC.	Training for One Click LCA has been and a <20 session for Carbon Designer has been made available to all staff.
	Initiate an EC interest group within your firm and provide a narrative of their goals.	EC task force has been created. Focused structural engineering interest group has also been created.
	Provide a narrative of how the Embodied Carbon Reduction Champion will engage EC reduction at each office.	Our EC Reduction Champion is leading the structural engineering interest group that includes from all offices that have structural engineers.
	Provide a narrative for other appropriate actions.	Present case studies of EC and adaptive reuse in SG's annual Design Week and Earth Day presentations

EMBODIED CARBON REPORTING

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.


REQUIREMENTS:

Status	Requirement	Implementation
	<p>Provide a narrative of how EC data is measured, tracked, and reported. Considering the following:</p> <ul style="list-style-type: none"> - How EC will be calculated for structural materials? - What commercially available LCA software(s) will be used to quantify EC? - What Life Cycle Analysis (LCA) methodology will be used? - How and how often will material quantities be extracted? 	<p>For each project the software used will be tailored to the project needs and the design phase.</p> <p>Software that may be used includes One Click LCA, EC3, ECOM as well as in house design aids.</p> <p>Tools will be used in early design phases to inform system selections and set preliminary EC targets.</p> <p>One Click LCA shall be used to extract EC information from our Revit models and into a database of our projects.</p>
	<p>Describe the internal training for EC measurement provided (or that will be provided).</p>	<p>Training has been provided by the software provider for One Click LCA for at least one employee in each office.</p> <p>Each person is piloting the use of OCLCA on a project. Regular meetings and a group chat have been created to collaborate through using the technology and adjusting how systems are modeled in Revit.</p> <p>Follow up training is being planned with the software provider.</p>
	<p>Submit an annual minimum of (2) project per office with structural engineers (Detroit and Chicago) to the SE 2050 database.</p>	<p>2 projects will be provided from each of our Detroit and Chicago offices will be reported.</p>

	Item has been completed
	Item in process

ELECTIVES:




(None required, 1 recommended per year)



Status	Elective	Implementation
	Submit all projects to the SE 2050 database.	
	Meet 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 Owner if the project has a carbon budget or if there are project sustainability goals at the project kick-off meeting.	
	Provide a narrative for other appropriate actions.	We are working to benchmark our projects beyond those reported in the first year to use for establishing EC targets.

EMBODIED CARBON REDUCTION STRATEGIES

It is necessary to identify and set strategies to achieve the goal to reduce the embodied carbon reduction of structural materials. We are developing best practices and actively collaborating with the design community.


REQUIREMENTS:



Status	Requirement	Implementation
	Set EC reduction goal for coming year and an implementation narrative. Qualitative goals focused on education are appropriate for the first year	We are working to benchmark our projects and researching to understand benchmarks within the industry. This data will be used to establish EC targets.
	For second year and beyond, provide a narrative of lesson's learned related to EC reduction in the past year. Describe success and misses for program improvement.	<p>We have been creating and adjusting project workflows and tools to enable staff to better incorporate embodied carbon reductions into projects.</p> <p>One strategy that we have is to incorporate more timber in our projects, but often find that preconstruction contractors and local trades are not always as supportive of these efforts. We have learned that early involvement from interested parties is critical, but not all projects/clients are receptive to early contractor involvement. We have found project cases where full mass timber may not have been achievable, but utilizing steel and timber hybrid systems enabled a large reduction regardless.</p> <p>A big lesson that we have learned which our specification updates is that we can't always wait for the language to be perfect and that we want to set the bar high - we may not always achieve the targets we are setting, but coming a little short is far better than doing nothing at all.</p>
	Minimum (1) additional elective to reduce EC in design, why the elective was selected and its significance.	See electives

	Item has been completed
	Item in process

ELECTIVES:

(1 required, 4 recommended per year)




Status	Elective	Implementation
	Incorporate data visualization into ECAP to assist in making informed decisions and communicate design options to clients.	As we track our EC and benchmark EC on our projects we will be including data visualizations on our Climate Central and AIA 2030 dashboard.
	Provide a project case study in ECAP to share lessons learned.	We included a brief case study related to adaptive re-use. Next year we will include a more detailed case study of embodied carbon reduction strategy that we used on a recent project.
<i>Create a project-specific EC reduction plan.</i>		
	Complete an embodied carbon comparison study during conceptual design on a project.	We have developed a comparison study for a health care project that incorporates EC into the decision matrix for selecting structural systems. This study has been used to create a tool our structural can and have used for designing similar health care projects. Additionally, we have used applied this tool to additional projects from other markets.
	Participate in a LEED, ILFI Zero Carbon, or similar design charrette and speak to potential design consideration impacting EC.	Nearly every design project utilizes design workshops early on to identify sustainability goals, including strategies to reduce EC.
<i>Calculate your firm average benchmark for EC.</i>		
	Update your specifications and incorporate EC performance.	We have updated our specifications to request EPD's and have updated our 2 most commonly used concrete specifications to take measures to reduce the embodied carbon on all our projects. We have also incorporated this language on projects with their own specific specifications.
		In 2024 we will be updating many of our other architectural, civil and structural concrete specifications. We are also in the process of updating all of our structural master specifications with other strategies to reduce embodied carbon.
	Collaborate with concrete supplier to reduce EC in a mix design.	We have collaborated with our contractor (and their suppliers) on a project in TN to reduce EC in our concrete mix designs. We also worked closely with an additional



		contractor in Michigan on a project that utilized a pilot version of our new concrete specification language. We made further refinements to our master specification language.
	Work with a contractor during material procurement to meet an EC performance criteria.	
	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 EC	
	Integrate EC mitigation strategies in your General Notes.	We are in the process of “greening” our general notes in coordination with updates to our specifications.
	Provide a narrative for other appropriate actions.	We are continually evaluating and enhancing our processes and workflows to better consider EC reductions for the design of our structural systems, as well as, other site, architectural, and engineering systems.

EMBODIED CARBON REDUCTION ADVOCACY

True change can only come with industry-wide adoption. We understand that our impact reaches beyond our firm. We are always seeking opportunities to share our experience and knowledge within our firm, with our clients and contractors, with the design community, and beyond.





REQUIREMENTS:

Status	Requirement	Implementation
	Provide a narrative about how knowledge and data will be shared to accelerate adoption of EC reduction.	<p>Our Embodied Carbon Reduction Champion participates in SEI Sustainability committee and several of our staff participate in sustainability efforts in the building design and construction industry.</p> <p>Regular forums take place in and across our offices to share knowledge, feedback, and experiences.</p> <p>Our Embodied Carbon task force meets bi-weekly to share and develop ideas as well as to prepare learning opportunities to be shared with the broader SmithGroup staff.</p>
	Describe the value of SE 2050 to clients. How can we collaborate to drive adoption? Attach associated marketing materials as desired.	Our EC task force has developed marketing and design workshop content for reducing embodied carbon that is shared with clients and used in project development.
	Declare firm as a member of the SE 2050 commitment on boilerplate proposal language.	<p>Declaration of SmithGroup’s commitment has been posted on our internal and external websites. The announcement was also shared on social media.</p> <p>SmithGroup Joins MEP 2040 and SE2050 Commitments to Carbon Neutrality SmithGroup</p>

	Item has been completed
	Item in process

ELECTIVES:

(None required, 2 recommended per year)

Status	Elective	Implementation
	Share commitment to SE 2050 on company website.	Declaration of SmithGroup's commitment has been posted on our internal and external websites. The announcement was also shared on social media. SmithGroup Joins MEP 2040 and SE2050 Commitments to Carbon Neutrality SmithGroup
	Give an external presentation on EC that demonstrates a project success or lessons learned.	SmithGroup will be presenting Embodied Carbon 101 to the Structural Engineering Association of Michigan (SEAMi) to share our commitment and encourage others in the industry and will be scheduling a follow up presentation to further the discussion. SmithGroup also presented EC reduction strategies on a recent project at the Michigan Mass Timber Conference in December 2023.
	Discuss with project Owners / Clients the option of requiring that some of the structural material come with facility-specific or product-specific EPDs.	
	Share educational opportunities with clients.	
	Provide a narrative encouraging industry and policy change incentivizing availability of low-carbon and carbon-sequestration materials.	
	Start an EC community of practice or mentorship program in your office.	Our EC task force connects a diverse group targeted towards reducing EC. The task force is supported by discipline-focused groups in these efforts and meets bi-weekly.
	Mentor a firm new to the EC space.	
	Provide a narrative for other appropriate actions.	We have encouraged our partners around the firm to reach out to any consultants that they may use to encourage those companies to also sign on to the SE 2050. We have also signed onto the MEP 2040 to further our commitment to reducing EC on our projects.