



| **2024**

Embodied  
Carbon  
Action Plan

# Introduction

In 2019, representative from SEI, CLF, AIA, and the USGBC began to formulate a program to tackle embodied carbon. In 2020, the SEI Board of Governors established SE 2050 as a formal SEI program aimed at inspiring structural engineers, architects, developers and building owners to eliminate embodied carbon from buildings.

The SE 2050 challenge targets the buildings structural systems which, due to their dependence on carbon-heavy steel and concrete, can represent more than half of the embodied carbon in a building project. Embodied carbon emissions represent emissions released in the extraction, production, transport and manufacturing of building materials over the course of a building's lifespan.

As a leader in sustainable design, it is in HOK's ethos to join the commitment and pledge to reduce embodied carbon in our building projects. HOK has been a signatory firm since SE 2050's inception and has been developing yearly Embodied Carbon Actions Plans to show progress, prepare for the following year and share the lessons learned along the way.

## Executive Summary

HOK has been a signatory firm of SE 2050 since 2020 and has successfully fulfilled the yearly requirements of the commitment. As a result of the firm's commitment to reduce embodied carbon, HOK's Executive Board enacted the HOK Whole Building Life Cycle Assessment (WBLCA) Policy in which an LCA is required to be conducted on all new build projects. The LCA data informs how HOK-designed buildings are performing and guides the selection of optimal structural systems and project specifications that drive the market to reduce embodied carbon in our design.

The ultimate goal of the commitment is to reach net zero embodied carbon by 2050. Currently, there are no industry-accepted benchmark values of carbon intensities that reductions can be measured against. HOK has made an concerted effort to conduct LCAs on as many projects as possible to develop a firm-wide benchmark. As of 2024, HOK has set a annual carbon intensity target on 7% each year to reach the goals of 50% reduction by 2030 and 100% reduction by 2050.

This year, one of HOK's major goals is to educate staff and emphasize the importance of engaging with structural engineers early in the design process to not only achieve an economically efficient structural system, but design systems with the lowest embodied carbon. HOK is improving how design teams integrate LCAs into the design process at the early stages of design and aim to continue to conduct LCAs on new building projects, collect data for internal benchmarking and share the results with organizations such as CLF and SE 2050.



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# Education

As structural engineers, prioritizing embodied carbon reductions will require a change to our typical practice. This shift in priorities will require a continuing education program to ensure that HOK is moving in the right direction. HOK's internal education program aims to instruct staff on the urgency of embodied carbon emission reductions and how to achieve them on projects.

Reducing embodied carbon in building structures is a multidisciplinary problem that is best solved through collaboration with all members of the project team. HOK's education program also targets our architectural and other engineering discipline groups.

## LESSONS LEARNED

Education is ever-evolving. Over the past two years HOK has given multiple internal presentations to educate staff, new and old, on the need to analyze the embodied carbon on all projects to assist in meeting the Intergovernmental Panel on Climate Change (IPCC) recommended emissions envelope. We are continuing to educate project managers and project architects regarding the ExCom's directive of a firm-wide LCA Policy to run an LCA on all whole new building projects.

We are still challenged by the hurdle of individuals supporting sustainability only until they must give something up (whether it is a design feature, typical construction method, etc.), and having them understand that radical change in results can only be accomplished with radical change in design.

We continue to learn about new material technologies that reduce embodied carbon. Pozzotive has given presentations to our offices we are exploring opportunities to use Pozzotive on a project in 2024. As the market continues to develop new technologies we at HOK keep our staff updated on new technologies via our internal HUB Knowledge groups. We are using the HUB as a place to track new technologies as they move from early stages of development to market-ready products, in order for our staff to have an evolving repository of technologies for implementation.

## Education Pillar Requirements

- The HOK structural group will continue to give firm-wide presentations including at least two encompassing an introduction to embodied carbon, HOK's progress on SE 2050's commitment, structural engineering strategies to reduce carbon intensities, and general industry-wide updates.

Thus far, these presentations have been given to groups separately within the firm given the size of the firm and time zones of different offices. These groups include HOK's core board, market-specific interdisciplinary groups, disciplines (such as structural engineering), project architect and project manager groups, and 10 individual regional offices.

- At least 9 training/presentations to various offices related to embodied carbon have been given for 2023. We plan on at least 5 training/presentations for 2024.
- New employees will be referred to the to Boston Society for Architecture's Embodied Carbon 101 video series. <https://www.architects.org/embodied-carbon-101-video-archive>



## NASCC: The Steel Conference 2024

During the March 2024 conference, HOK led two sessions specifically on steel and sustainability, targeted for the architects and engineers in the audience. The presentation topics were:

- "Innovative Design: A toolkit for reducing embodied carbon in steel structures" : Learn about useful rules of thumb which help set up your projects for a successful reduction in embodied carbon emissions. Explore readily available tools that can be used in real scenarios to help you keep track of the project embodied carbon during all design phases. (Amir Aghajani)
- "Optimizing Steel Design: An Integrated Approach for Lowering Embodied Carbon" : During the early stages of design, parametric modeling and optimization processes become extremely helpful tools to quickly analyze structural solutions that are optimized based on project specific needs. This presentation will showcase how embodied carbon reduction can become part of the optimization process for steel structures. Project case studies will include vibration sensitive floor design and long span structures. (Francesca Meola, Claire Moore)

## Recommended Electives

Train all of your firm's structural engineers on the core concepts and skills required to measure, reduce, and report embodied carbon.

HOK has given at least 2 trainings to structural engineers that are tailored to conducting LCAs and how to understand the results. We developed an internal "How-To Guide" document and video recording as a reference for anyone in the company interested in conducting a LCA within the "HOK LCA Policy". It provides background information on the purpose of LCAs. The "How-To Guide" is ever evolving and is slated to be updated in Q2 of 2024.

### Engage with a CLF Regional Hub.

Currently, there are HOK staff from the New York, Houston, and San Francisco offices who participate in the CLF Community and are members of regional hubs.

Jaclyn Lee is actively engaged/aware of external education programs provided by the SE community through NCSEA, SEAOC, SE 2050, CLF and others.

**Minimum 1 employee attends a presentation or demo of an LCA-based tool used to calculate embodied carbon such as Tally, Athena IEB or One-Click LCA.**

OneClick LCA is the primary tool that HOK uses to calculate embodied carbon. We attended a demonstration on their Net Zero Tool and Carbon Strategy Tool. Included in HOK's license are two tailored onboarding sessions that we will take advantage of biannually.

Royal Caribbean Group Headquarters  
Miami, FL



# Reporting

HOK has established a firm-wide policy to perform a structural LCA on all new construction building projects that are over 5,000 square feet. All LCAs are performed using OneClick, and the results are uploaded to a firm-wide project database.

Material quantities are extracted from project Revit models through a hybrid method that uses the OneClick Revit plug-in and Revit schedules. When choosing baseline materials, Environmental Product Declarations (EPDs) that reflect regional industry-wide data are preferred. If regional data is not available, EPDs that represent national industry-wide data are used.

## Reporting Pillar Requirements

Since 2021, HOK has submitted 29 projects to SE 2050. These projects are spread across 12 different states and represent nine different Primary Building Use Types. Looking ahead to 2024, HOK aims to conduct LCAs for over 15 projects, with at least 5 of them being submitted to the SE 2050 database.

HOK has been compiling data from all firm-wide projects for which an LCA was conducted. This collected project and emissions data has been used to create a dashboard with the goal to present information, including visuals, in an easily accessible format for designers to view. It is currently used only by a small working group, but will eventually be available firm-wide. The goal is to use the dashboard to identify and communicate any significant trends or variables affecting project emissions.

## LESSONS LEARNED

Since joining the SE 2050 challenge and enacting HOK's LCA Policy, we have 50 projects with GWP intensity data. We continue to educate project managers about the policy and importance of conducting an LCA on all eligible projects. As a next step, we are now working towards conducting multiple LCAs at different design phases on projects to implement reduction targets early.

At HOK we log project information into an internal databases which is separate from how we log projects into SE 2050's database. We are still working on a method to merge the information so that project teams do not have to input it in multiple locations. In addition, since HOK is a multidisciplinary firm and have signed up for multiple industry environmental challenges/commitments we are trying to streamline our reporting efforts; similar to CLF's ECHO project.



### Emory University HSRBII

Atlanta, GA

LEED Gold Anticipated

A 350,000 sq-ft. 8-story preeminent biomedical research building on Emory University's campus that, despite starting when the project was in construction, was still able to make embodied carbon reductions through the concrete mixes. Ideally, a baseline LCA is conducted early in the design phase to make the most impact without compromising intended design nor schedule. However, for this project, the design team worked closely with the contractor and client to run comparative LCAs for 8 different concrete mixes of varying fly-ash replacement during construction. The final mix designs were a combination of what worked for the construction schedule and met the design team's ultimate sustainability goals.

## Recommended Electives

For multi-office firms, describe how each office is measuring and reporting embodied carbon. For single-office firms, describe how different project teams or managers are measuring and reporting embodied carbon.

HOK implements a firm-wide policy to perform, at minimum, a single iteration structural system LCA on new construction building projects that are over 5,000 square feet. This data gathering informs design teams of their projects' embodied carbon across their portfolio of various project types and develop appropriate reduction targets.

As a firm, we are working to achieve consistency with material mapping of industry-wide EPDs so that we can accurately compare results to appropriately set embodied carbon intensity benchmarks.

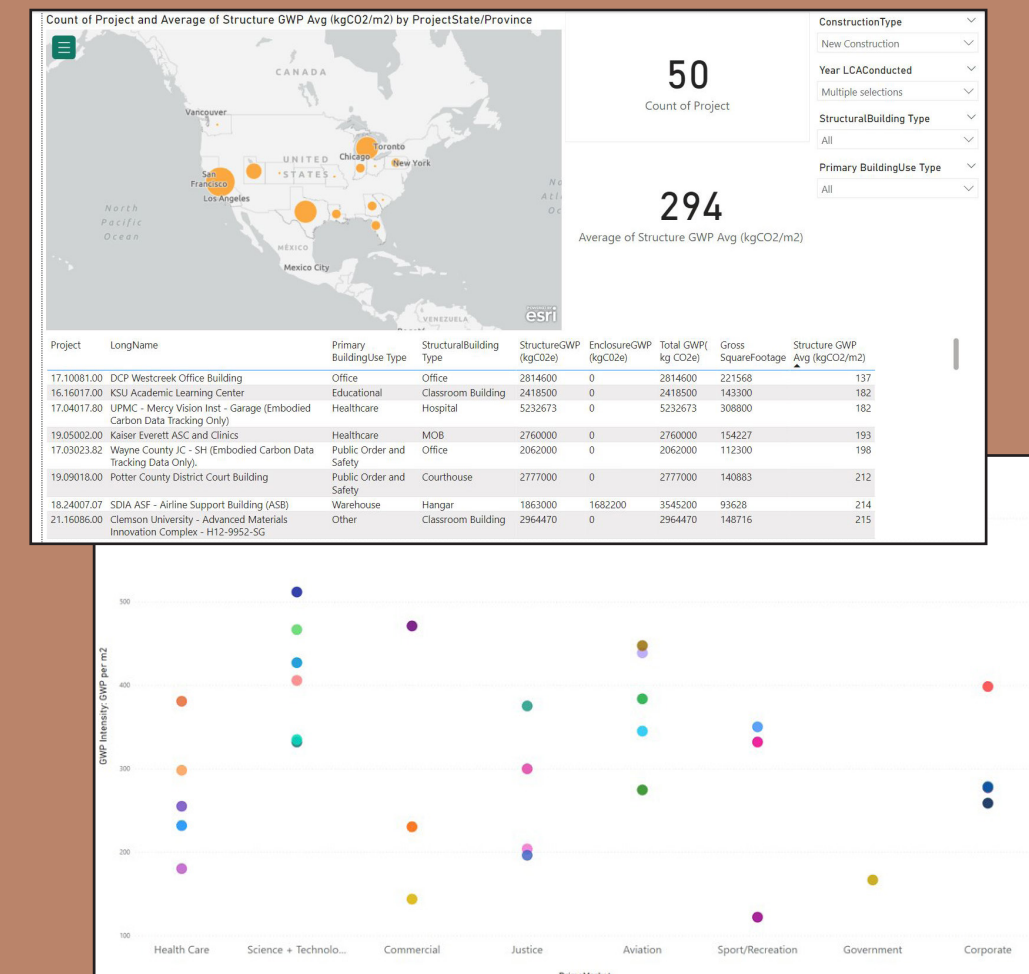
Compare the embodied carbon emissions from multiple projects across your firm. Analyze and document what data or pieces of information are most important and communicate the findings to your firm.

HOK has undertaken the task to compile data for all firm-wide projects for which an LCA was conducted. The project and emissions data have been used to create a dashboard with the intent to present information, including visuals, in an easily accessible format for designers to view trends and make appropriate design decisions to reduce embodied carbon.

Although we have over 50 projects in our database, the data is currently not enough to discern which pieces of building information are most important. However, we have been able to use the data to set a firm-wide embodied carbon intensity benchmark from which we can make reductions from.

There currently is no US-wide industry accepted embodied carbon emissions benchmark value for buildings. Since HOK joined SE 2050 in 2020, we have focused on gathering data on projects to determine a firm-wide benchmark. We believe that a benchmark will help us make meaningful reductions and get us to net zero.

We have analyzed over 50 projects and determined that our benchmark number is 295 kgCO<sub>2</sub>e/m<sup>2</sup>. Starting in 2024 we set a minimum 7% reduction to get to a 50% reduction by 2030 and eventually 100% by 2050.



We developed a dashboard that provides basic visual aids to indicate where projects are located, what emissions are for certain market sectors, etc. We are continuing to gather more data to parse more granular conclusions and make sophisticated visual aids.

# Reduction Strategies

Identifying strategies that can effectively and efficiently reduce the embodied carbon content of building structures is critical in our efforts to mitigate climate change. Many of these strategies can (and should) be implemented today, while others can be considered more towards the future.

HOK is exploring all avenues to reduce embodied carbon on projects. We have incorporated embodied carbon criteria into our engineering decision making and low embodied carbon material specifications into all our projects. We are also actively engaging with clients and architects early on in projects to highlight our reduction strategy and how we plan to hit a reduction target.

## Reduction Strategies Pillar Requirements

With our internal embodied carbon benchmark of 295 kg CO<sub>2</sub>e/m<sup>2</sup>, HOK is now measuring all future reductions from this 2023 HOK embodied carbon benchmark. Our reduction goal is to reach a 50% reduction by 2030 or a 7% reduction per year starting in 2024. Reduction percentage is currently targeted based on the project's expected construction start date.

Our strategy to hit this annual reduction target is to split embodied carbon reductions into two categories and focus on each separately: material specification reductions and design reductions. The first deals with how we specify low embodied carbon structural materials and the second on engineering design decisions that reduce embodied carbon.

In the coming year, HOK will focus on finalizing our low embodied material specifications for masonry and timber, improve the process to catalog and track design decisions, and form material working groups to evaluate new up and coming technologies.

## LESSONS LEARNED

After gathering our LCA data this year, we were hoping to develop more finite conclusions or identify trends that impact GWP intensity. However, while we had enough project data to set our internal HOK benchmark, we concluded that we did not have enough data to reliably identify trends. We'll plan to augment our current database with older HOK projects in certain market sectors or structural building types in 2024.

Our initial material specification strategy to specify low embodied carbon structural steel was not successful due to the trial project schedule as well as the realities of structural steel supply chain and sourcing. Strategies that may work on a large project with a direct to mill order will not work on smaller projects where steel may be purchase through steel service centers. Through conversations with industry partners like Nucor, we have revised our steel specification framework and are excited to test it out this year.

## PROJECT HIGHLIGHT



### Silicon Valley Corporate Headquarters

Sunnyvale, CA

HOK piloted our revised framework for low embodied carbon material specifications on a large project in Silicon Valley. Due to the high water table, the basement required a mat slab ranging from 4'-0" to 5'-0" thick which accounted for a large portion of the structure's total embodied carbon. As a part of HOK's strategy to achieve a 25% reduction across the entire building, we specified mix designs with a 25% reduction from a 2018 SEAONC concrete design mix survey.

Without additional prompting, the concrete supplier for the project — Central Concrete — provided multiple foundation mixes with a global warming potential <170 kg CO<sub>2</sub>/m<sup>3</sup>. These provided concrete mix designs had 70% cement replacement and a GWP intensity nearly half of the specified value. As a result, the project achieved a 38% reduction in total building embodied carbon.

Whole-building Life Cycle Assessment, ISO 14040 & ISO 14044 (TRACI 2.1.) [Download Results Summary](#)

Result category	Global warming kg CO <sub>2</sub> e	Ozone Depletion kg CFC11e	Acidification kg SO <sub>2</sub> e	Eutrophication kg Ne	Formation of tropospheric ozone kg O <sub>3</sub> e	Depletion of nonrenewable energy MJ	Biogenic carbon storage kg CO <sub>2</sub> e bio
A1-A3 Construction Materials	29,204,263.16   -43%	0.78   -72%	136,239.73   -31%	41,174.79   -73%	2,449,549.98   -16%	149,079,062.61   -26%	
A4 Transport to the building site	2,896,028.53   -78%	0.66   -8%	5,010.82   -11%	2,014.24   -8%	71,724.33   -15%	44,646,800.76   -8%	
B3 Repair							
B4-B5 Material replacement and refurbishment	950,966.33   8%	0.01   6%	4,373.73   9%	325.99   6%	107,157.33   9%	13,789,541.84   9%	
C1-C4 End of life	1,293,786.04   -380%	0.3   -340%	4,983.89   -260%	1,252.3   -560%	122,099.27   -600%	20,180,965.9   -130%	
<b>Total</b>	<b>34,345,044.05</b>	<b>1.75</b>	<b>160,608.18</b>	<b>44,767.31</b>	<b>2,750,530.91</b>	<b>227,696,371.12</b>	<b>0</b>
Comparing total results with: 4 - Designchanges_Baseline_CD_CLF							
<b>4 - Designchanges_Baseline_CD_CLF Total</b>	<b>55,297,420.89</b>	<b>3.58</b>	<b>210,135.77</b>	<b>156,999.21</b>	<b>3,140,209.76</b>	<b>272,659,330.02</b>	<b>0</b>
<b>3 - AsDesigned_CD compared with 4 - Designchanges_Baseline_CD_CLF</b>	<b>-38%</b>	<b>-51%</b>	<b>-28%</b>	<b>-71%</b>	<b>-12%</b>	<b>-16%</b>	<b>0%</b>
Results per denominator							
Gross Internal Floor Area (ASHRAE) 911270 0 sq ft	37.69	0	0.17	0.05	3.02	249.87	0

Please note. The following LCA or EPD standards are all fully compliant with the requirements of ISO 14044, ISO 14025, ISO 21930, EN15804. Assessment period fixed to 60 years.

## Recommended Electives

### Calculate your firm average benchmark for embodied carbon

HOK's embodied carbon benchmark for structure only (sub and superstructure) is 295 kgCO<sub>2</sub>e/m<sup>2</sup>. This was determined from 50 projects of a varying of structural systems, project locations, and market sectors.

HOK is still tracking future updates to this benchmark and will work towards future revisions. The two priorities identified are:

- 1) Breaking out building use specific benchmarks: Similar to how AIA treats pEUI, we acknowledge that different building uses have inherently higher or lower embodied carbon intensities. We currently do not have statistically significant data for all building uses.
- 2) Incorporating exterior enclosure data: Reliable information on exterior enclosure embodied carbon accounting can be very time consuming and currently covered only via LEED requirements. We have not yet identified a process for incorporating embodied carbon reduction strategies into exterior façade systems. These are tasks our Façades Engineering group will be focusing on in the future

### Collaborate with your concrete supplier to reduce embodied carbon in a mix design below an acceptable baseline (e.g. NRMCA regional baseline values). Discuss what you found and what it means in your market.

For a project in New York, we are working the contractor and concrete supplier to get the project's mix designs to include a particular cement replacement. This cement replacement has been successfully used on other projects however, the contractor is not familiar with it. We are in the process of educating the project team with the product to be used in the mix. The product can replace up to 50% of cement in concrete.

### Update your specifications to incorporate embodied carbon performance. Include embodied carbon in your submittal review requirements.

HOK has incorporated embodied carbon limits into our template contract documents that are adjusted on a project by project basis. Note that this language is split across our specifications and general notes. Our experience is that incorporating embodied carbon language solely into project specifications makes them more likely to be overlooked. Thus we note the limits in our General Notes.

Under the submittal requirements subsection of our specifications, we list requirements for material tracking for and information needed to run WBLCA's like EPD requirements and a bill of materials. In the products subsection, we reference the maximum embodied carbon criteria on our general notes and provide alternate compliance paths. We also recognize that the reality of material procurement is different for each major structural material. HOK has developed guidelines and a strategy to specify low embodied carbon materials for cast-in-place concrete and structural steel. We are actively working on an hybrid approach towards reinforced masonry with a trial run this year. We are also in the process of developing specifications for the various mass timber products.

Compare different design options with embodied carbon as a performance metric during the project concept phase. Explain what you did and what the results changed (if anything).

HOK references the A3 format from Lean Construction to present relative embodied carbon intensities to clients and architects while deciding on structural systems early on in projects. While this is not the sole deciding factor for building structure decision making, incorporating embodied carbon as one of the decision making variables helps push project teams in the right direction. See below for a few samples:

**Structural System Options:**

Metric/Option	Option 1: Steel Deck	Option 2: Steel Deck with LVL	Option 3: Steel Deck with Precast	Option 4: All Concrete
Floor System Depth	BRDF 48" - 48"	BRDF / Precast Slabs 48" - 48"	Steel Deck 17" - 18"	Steel Deck 17" - 18"
Foundation System	Mat slab or 12" ISD spread footing with ground improvement	Mat slab or 14" ISD spread footing with ground improvement	Mat slab with ground improvement	Mat slab with ground improvement
Steel Tonnage	12,000 Tons	4,000 Tons	1,900 Tons	800 Tons (Steel)
Concrete Volume	17,000 CY LWC / 35,000 CY HWC	13,000 CY LWC / 63,000 CY HWC	4,500 CY LWC / 101,000 CY HWC	116,000 CY HWC
Reinforcing Volume	222 PCF	222 PCF	222 PCF	222 PCF
Embodied Carbon	\$102 / gal	\$101 / gal	\$109 / gal	\$125 / gal
Carbon Intensity	100%	100%	100%	100%

**Design Team Recommendation:** [Option 2]

**Risk/Opportunity Decision:** [Option 2]

**Mass Timber Options:**

Using mass timber (CLT) as an alternate structural system that can be used to address building challenges on the project.

1) Soft and compressed soils where reduced foundations require greater lateral and vertical movement. 2) Reduced embodied carbon to be in line with the project site vision of moving beyond sustainable design being a marketing gimmick.

**Embodied Carbon Commentary:**

The embodied carbon comparison is made assuming that the baseline building is a modern structural steel building using 100% concrete. The embodied carbon of the mass timber building is based on the maximum embodied carbon of the mass timber building. However, the building industry is moving towards producing low-carbon mass timber products. The embodied carbon of mass timber products is expected to decrease significantly over the next 10-20 years.

**Typical Building Sections for Mass Timber Building Options:**

Option	Option 1: Office Lab with Basement	Option 2: Office Lab with Basement	Option 3: Office Lab without Basement	Option 4: Long Span OR High-Rise structure
Height	Up to (3) stories	Up to (3) stories, limited by permit	(3) stories, limited by permit	(1) story
Structural System	5 PLY CLT and GLB girders	5 PLY CLT and GLB girders over concrete	5 PLY CLT and GLB girders without basement	Hybrid mass timber and steel truss, CLT roof panels
Foundation System	Shallow mat foundation	Below grade mat foundation	Shallow foundations on 20' deep ground improvement	Shallow foundation
Foundation Impact	Baseline excavation quantity, spoils and de-watering disposal	Significant excavation quantity, spoils and de-watering disposal	Baseline excavation with drilled displacement columns	Baseline excavation quantity, spoils and de-watering disposal

**Mass Timber Embodied Carbon Comparison vs. Other Construction Materials:**

Grid Spacing	20' x 30'	30' x 30'	20' x 30'
Vibration Criteria: ISO Operating Room (4000 nps)	ISO Operating Room (4000 nps)	ISO Operating Room (4000 nps)	ISO Operating Room (4000 nps)
Embodied Carbon (kgCO <sub>2</sub> e/m <sup>2</sup> )	64%	100%	124%

Mass Timber Building Options & Embodied Carbon  
Issue Date: 06/28/23

Note that embodied carbon comparisons are not limited to use in concept phase. We have also used partial LCA's as a decision variable to determine the best way to handle stricter vibration criteria, beam span direction, or long span conditions. Moving forward, HOK's goal is to incorporate embodied carbon into our engineering decision-making process, rather than only the criteria commonly used (tonnage, structural system depth, cost, schedule, etc...)



# Advocacy

Advocacy and thought leadership of embodied carbon reduction is an integral part of influencing change within the industry-at-large. It is important that we share our knowledge of the efforts, successes and lessons learned to clients, the design community and public.

HOK's strategy to advocacy and thought leadership has been to share our findings with local project teams and clients, agencies such as GSA, public forums through Carbon Leadership Forum and SE 2050, and provide public feedback to proposed policies, codes and green building rating systems.

## Advocacy Pillar Requirements

- HOK has met the initial requirement of publicly announcing our commitment to SE2050 since we joined in 2020.
- HOK has given a presentation on embodied carbon to various university student groups industry committees such as Passive House and national conferences such as the 2024 NASCC Steel Conference.  
We are looking at presenting to the CLF LA hub on our efforts with interior LCA. Even though it will not be structural-LCA focused, there are similar lessons learned in conducting the LCA and how it's a collective effort by the designers and contractors to a project's success. We are presenting the Moss project experience and low embodied carbon materials at the AIA symposium in June.
- HOK has provided insight to GSA on low-embodied carbon policy and to NREL on best practices on how to compare low carbon buildings with typical construction.
- HOK provided data to CLF for both their California-specific study and to their benchmark v 2.0 study. We continue to be involved with local sustainability design committees to share our experiences as well as learn from other firms. We will continue to engage with contractors and manufacturers for in-field perspectives on how execution of low-carbon materials is progressing and/or being accomplished successfully.

## LESSONS LEARNED

HOK realizes the importance of industry awareness to see change. We have benefited from giving internal and external presentations as well as attending external presentations because we learn something new every time. Whether it is about a new product, lessons learned or simply updates we must keep advocating the importance of measuring and reducing embodied carbon in the building industry. Furthermore, we are committed to aggressive change, and understand that buildings that open in 2030 are often on the drawing board today, so we must target reductions well beyond our LEED credit thresholds and set precedents for the industry.

## PROJECT HIGHLIGHT



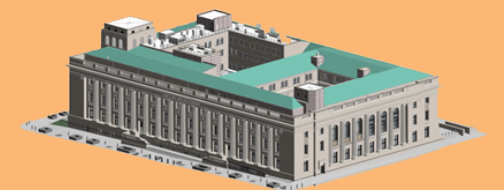
### Frank E. Moss Courthouse Salt Lake City, UT

We often hear that renovating and using what is already built is the least carbon intensive way to build "new" buildings. However, it's not clear how much embodied carbon is actually being saved. The Moss Courthouse LCA analysis project looked at the estimated emissions reductions when considering a renovation/retrofit building compared to constructing a whole new building of similar size and function. The results of the study were intended to assist General Services Administration (GSA) in setting performance targets on their future design and construction projects and assist in achieving climate action goals.

HOK analyzed the carbon emissions of the structure, enclosure and interiors of two different buildings; the renovation of the historic Frank E. Moss Courthouse and the baseline case, a hypothetical newly constructed building. For the Moss Renovation, only new elements associated with the renovation were included in the analysis; demolished and existing elements were not. By renovating the existing historical structure, 59% less embodied carbon could be emitted as compared to constructing new. The difference in embodied carbon is equivalent to the carbon sequestered in one year's time by 7,830 acres of US Forest or the size of 5,921 football fields.



**Baseline**  
New Replacement Building (NRB)



**Frank E. Moss Courthouse**  
Seismic Upgrade & Renovation

## Recommended Electives

### Give an external presentation on embodied carbon that demonstrates a project success

HOK has given presentations on embodied carbon to various university student groups, industry committees such as Passive House, and national conferences such as the 2024 NASCC Steel Conference.

We are looking to present to the CLF LA hub on our efforts with interior LCA. Even though it will not be structural-LCA focused, there are similar lessons learned in conducting the LCA and how it's a collective effort by the designers and contractors to a project's success.

### Engage with local, state, and federal governments to communicate the importance of low-embodied carbon procurement and construction policies, and provide expert testimony to this effect

HOK has provided insight to GSA on low-embodied carbon policy and to NREL on best practices on how to compare low carbon buildings with typical construction

### Propose alternative methods for advocacy and describe their value

HOK provided data to CLF for both their California-specific study and to their benchmark v2.0 study. We continue to be involved with local sustainability design committees to share our experiences as well as learn from other firms. We will continue to engage with contractors and manufacturers for in-field perspectives on how execution of low-carbon materials is progressing and/or being accomplished successfully.



*HOK's approach to reducing carbon is holistic; we are a signatory firm to major industry challenges that are tackling both operational and embodied carbon emissions. AIA 2030, which has primarily focused on operational carbon, now is tracking embodied carbon and we are contributing data. The American Society of Landscape Architects and Science Based Targets are operational carbon focused. MEP 2040 is a commitment that addresses both operational and embodied carbon of systems, and of course SE 2050 which is embodied carbon of structures.*

## LaGuardia Airport

New York City, NY





HOK.com

