



ELEVATE the HUMAN EXPERIENCE THROUGH DESIGN



At DLR Group, sustainability is woven into the fabric of our Vision Strategic Goal to: "Advocate for our planet, climate, and community." Our Embodied Carbon Initiative plays a pivotal role in advancing this vision.

By leveraging our superpower as an integrated design firm, we connect the dots between operational and embodied carbon to optimize building performance and drive impactful sustainability outcomes.

Our approach underscores our commitment to transparency, accountability, and continuous improvement in minimizing the environmental impact of our work.



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<u>O1</u> Introduction

DLR Group is proud to submit our Embodied Carbon Action Plan (ECAP) as part of our commitment to the SE 2050 program. Our approach integrates embodied carbon considerations seamlessly into the design process through a cohesive, interdisciplinary strategy. By leveraging our superpower as an integrated design firm, we connect the dots between operational and embodied carbon to optimize building performance and drive impactful sustainability outcomes.

Through innovative design solutions, knowledge sharing, and collaboration with industry leaders, DLR Group aims to significantly reduce the embodied carbon of our projects, aligning with SE 2050's goals for a more sustainable future. Our plan reflects our ongoing commitment to transparency, accountability, and continuous improvement in reducing the environmental impact of our work.

DLR Group		
Architecture Engineering Planning Interiors		
6457 Frances Street, Suite 200 Omaha, NE 68106		
Friday, June 4, 2021		
To: Laura Champion, Director, Structural Engineerin	g Institute	
From:		
Re: Letter of Commitment to the SE 2050 Program	m	
Dear Laura:		
DLR Group is a 1200-person integrated design firm 2050 Commitment Program. We support the vision ultimately eliminate embodied carbon in their project	with offices around the globe is hereby signing on to th that all structural engineers shall understand, reduce, a cts by 2050.	e SE and
Please refer to the narrative provided in as an attac	hment.	
Therefore, DLR Group commits to take the following	g steps which are part of the SE 2050 Commitment Pro	gram:
 We will commitment to including Embodied Carbo Architecture 2030, in our firmwide Sustainable Activ Plan is to make Embodied Carbon an item to be stu teams. 	on not only for SE2050, but also as part of our commitn on Plan. Our goal of its inclusion within our Sustainable died by not only our structural team, but our Integrated	Action Design
 Within one year and annually henceforth, we com collaborative effort to understand embodied carbor targets for future projects. 	mit to submit data to the SE 2050 project database in a n in structural engineering projects and to set attainable	2
We look forward to joining this coalition and industr	ry effort to achieve the goals of the SE 2050 Program.	
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DLR Group		
(A)		
1 man	Lindsey Piant Perez	
Lloyd Ramsey, Principal Global Engineering Leader	Lindsey Piant Perez, AIA, LEED Fellow Global Sustainability Leader	
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DLR GROUP'S - SE 2050 COMMITMENT LETTER DATED JUNE 4^{TH} , 2021

EMBODIED CARBON TASK FORCE

The Embodied Carbon Task Force at DLR Group is a key initiative that brings together a network of local champions across our offices, each playing a vital role in leading and advancing our embodied carbon efforts. Composed entirely of structural engineers with design experience across a wide variety of structural engineering systems and types, our Task Force members have been instrumental in developing a comprehensive strategy that can be adapted to the diverse sectors and projects within DLR Group's portfolio.

The Task Force has played a key role in performing Life Cycle Assessments (LCA) on all eligible projects, delivering continuous training for our structural engineers, and offering localized support to our teams. They have also been actively involved in evaluating various estimating and tracking tools to identify best practices and document effective strategies for reducing embodied carbon in future projects

Through the collaborative efforts of the Task Force, we have fostered a culture of continuous learning and improvement, ensuring that our approach to embodied carbon remains innovative, data-driven, and regionally relevant. Below, we highlight the members of our Embodied Carbon Task Force for each region, whose dedication is central to achieving our sustainability goals.



Responsibilities of a Member of the Embodied Carbon Task Force include:

- 3. Advocate for Embodied Carbon Reduction and Serve as a Subject Matter Expert: Champion the importance of embodied carbon reduction throughout the design process by ensuring project teams are equipped with the knowledge and tools to prioritize sustainability. Serve as a resource across the assigned region, offering expert guidance on best practices and communicating strategies for reducing embodied carbon.
- Coordinate LCA Standard Procedures: Ensure consistency and reliability in Life Cycle Assessment (LCA) reporting across regions. Task Force members are responsible for conducting quality control on LCAs completed in their region.
- 4. Develop LCA Best Practices into Design Tools: Explore and document LCA best practices into DLR Group's ST Revit Model Template to ensure proper and consistent modeling of structural elements, families, material properties, and other key components.
- Submit Data to the SE2050 Database: Submit embodied carbon data, gathered to the SE2050 Database on an annual basis (minimum of five projects per region).
- 6. **Continuous Training:** Lead the LCA tool training (such as Tally, EC3, Cove Tool, and C.Scsle) for all structural engineers in the region, ensuring team members are up to date with the latest tools and methodologies.
- 7. **Monitor Industry Trends and Regulations:** Maintain an active presence in relevant regional and national industry committees to stay current on local ordinances and emerging sustainability policies, ensuring DLR Group is always aligned with the latest standards.
- 8. Track and Measure Embodied Carbon Reductions: Work to meet DLR Group's goal of achieving a 10% reduction in Global Warming Potential (GWP) on every project through careful material selection, specifications, and the implementation of targeted embodied carbon reduction strategies.



Along with the regional representatives, the Task Force includes key contributors from the firm to facilitate the initiative's connection to other areas of the organization.



Diana Gonzalez, PE Senior Associate | National Embodied Carbon Leader | Phoenix



Senior Associate | Climate + Environment Engineering Representative | Chicago



Prem Sundharam Senior Principal | Chief Climate Officer | Seattle

Education Plan

At DLR Group, we are committed to fostering a culture of learning and continuous improvement in the field of embodied carbon reduction. Our education strategy is designed to equip all employees with the knowledge and skills needed to integrate sustainability into their daily work and to champion embodied carbon reduction across the firm.

Our education plan focuses on a robust training program for structural engineers, equipping them with the core concepts and tools needed to measure, reduce, and report embodied carbon. This includes training on industry-leading LCA tools like Tally, EC3, and Cove Tool, as well as integrating embodied carbon considerations into the design process. We host internal webinars and share external resources to keep staff informed on emerging trends, policies, and best practices in embodied carbon reduction. All related webinars, tool training sessions, and educational materials are recorded and stored on our internal learning platform, **Campus**, so employees can access them anytime for ongoing learning and reference. These efforts are further enhanced by our regional Embodied Carbon Champions, who offer local expertise and support.

In addition to training, over the past year, the Embodied Carbon Task Force has published a **Reduction Strategies Guide**, offering practical advice on reducing embodied carbon for different material types—Steel, Concrete, Wood, and Masonry—throughout all project phases. This guide is a valuable resource for our interdisciplinary teams, providing actionable strategies that can be applied to real-world projects.

By prioritizing education, we empower our staff to make informed decisions and actively contribute to DLR Group's decarbonization efforts, making measurable progress toward reducing embodied carbon in our projects.



DLR GROUP'S -EMBODIED CARBON REDUCTION STRATEGIES GUIDE

EXTERNAL COMMUNICATION STRATEGY FOR EMBODIED CARBON REDUCTION

At DLR Group, we are committed to reducing embodied carbon in our projects and sharing our efforts, successes, and lessons learned with external stakeholders. Our communication strategy aims to inspire and lead the design community toward more sustainable practices, foster collaboration, and contribute to the broader conversation on sustainability in the built environment.

Over the past year, we've focused on expanding the capabilities of our internal carbon dashboard, the **Getting to Zero Dashboard (GTZ).** This tool will track our progress in reducing both operational and embodied carbon, helping us make data-driven decisions and align with our sustainability commitments, including Architecture 2030, SE 2050, MEP 2040, and Materials Pledge.

Key goals of knowledge sharing include:

1. Client Engagement and Education

- Client Presentations and Reports: The new Getting to Zero Dashboard will help communicate carbon trends based on sector, project type, and regions. This helps clients understand the impact of sustainable design choices on their projects.
- **Sustainability Workshops:** We provide Values Cards and workshops to help clients navigate sustainability terminology and prioritize their goals.
- **Collaborative Goal Setting:** We work with clients and interdisciplinary team members to set embodied carbon reduction targets ensuring alignment with their sustainability goals. Every project at DLR Group starts with a tailored Climate Strategy.

2. Industry Leadership and Knowledge Sharing

- **Thought Leadership:** We contribute to industry publications, blogs, and speaking engagements at conferences, sharing our approach, challenges, and achievements in embodied carbon reduction.
- Industry Partnerships: DLR Group participates in initiatives like SE 2050 and Architecture 2030 to collaborate with other firms and advocate for systemic change in the built environment.

3. Public Engagement and Awareness

- Social media and Digital Platforms: Through social media and our website, we share updates on embodied carbon reduction efforts, project successes, and sustainability initiatives, reaching a wide audience including clients, industry peers, and the public.
- **Community Involvement:** We engage with local communities and educational institutions to raise awareness of embodied carbon reduction and encourage sustainable design practices through events, panel discussions, and sustainability initiatives.

4. Sharing Lessons Learned and Best Practices

- Reduction Strategies Guide and Tools: We share our Reduction Strategies Guide, offering practical advice on reducing embodied carbon for different materials—Steel, Concrete, Wood, and Masonry— across all project phases.
- Elevate Design Awards: Elevate an internal award designed to bring compelling stories of projects into view and organize the process of the design. Annually, we nominate and award projects under the Performance category that showcase energy and sustainability focus.
- Lessons Learned Webinars and Workshops: We host webinars and workshops to share our experiences with embodied carbon reduction, including both successes and challenges, allowing us to engage with the design community and encourage others to adopt sustainable practices.

Through these efforts, DLR Group is committed to transparently communicating our embodied carbon reduction work, inspiring others in the industry, and fostering a collaborative, sustainable future.



Knowledge Sharing

DLR Group actively advocates for embodied carbon both internally and externally. This advocacy is shared through committee participation, presentations, articles, and publications, as well as through internal design shares, discussions, and articles posted on DLR's intranet.

San Quentin Rehabilitation Center: Climate Strategy Story Internal Firm-Wide Design Share; Dated 4/23/2024

San Quentin Rehabilitation Center featured In Fast Company Project <u>publication</u> describing extensive carbon assessment for building, envelope & landscape; Dated 11/27/2024

Embodied Carbon Bootcamp & Symposium for Structural Engineers hosted at the University of Colorado Boulder Diana Gonzalez presented DLR Group's approaches to embodied carbon, lessons learned, and the initiatives the firm has undertaken; Dated 08/07/2024

DLR Group's First Embodied Carbon Summit Internal Interdisciplinary Embodied Carbon Submit Firm-Wide Discussion; Dated 12/04/2024

DLR A New Era of Retrofits: Decarbonization of the Cleveland Museum of Natural History

<u>Article</u> featured in PAPYRUS Magazine, written by Coral Pais and Jason Majerus; Dated 12/04/2024

Climate Strategy Week

A weeklong celebration to reinforce the firm's core value of Environmental Stewardship, featuring a series of virtual and in-person learning opportunities for meeting sustainability commitments and executing climate strategies on every project; Dated 2/13/2025





<u>04</u> Reduction Strategy

At DLR Group, we are committed to reducing embodied carbon in our project work through both short-term and longterm goals, recognizing the importance of consistent progress and adaptability in our approach to structural design.

In the short-term (<1 year), our primary goal is to achieve a 10% reduction in Global Warming Potential (GWP) across all eligible projects. To meet this target, we will focus on implementing strategies that prioritize the use of low-carbon materials, optimize structural design to reduce material usage, and incorporate industry-leading Life Cycle Assessment (LCA) tools in our project evaluations. We will also track and measure the GWP of our projects, using this data to refine our processes and make data-driven decisions to enhance our sustainability efforts.

Looking toward the long-term (5+ years), we recognize that the path to significantly reducing embodied carbon requires a more transformative shift in the way we approach structural design. Over the next five years, our goal is to integrate embodied carbon considerations as a fundamental aspect of every project, making carbon reduction an intrinsic part of our design philosophy. We aim to achieve a 30% reduction in GWP across all projects by the end of this period, leveraging technological advancements, innovation in material science, and continued collaboration with industry partners to adopt best practices in carbon reduction. This will include scaling the use of carbon-neutral or carbon-negative materials, promoting circular economy principles, and investing in research to advance new structural design methodologies that prioritize environmental impact.

These long-term goals will be flexible, evolving as we continue to assess our progress and adapt to new industry developments. However, we are committed to making substantial, measurable reductions in embodied carbon and driving large-scale changes in our design processes to contribute to a more sustainable built environment. Through consistent goal setting, tracking, and collaboration, DLR Group will lead the way in reducing embodied carbon and fostering a more sustainable future in architecture and engineering.

			Communicate the Sustainability & Climate Action strategies through Sketches and Diagrams	0%	
	9 Carbon Storage		On-site/Off-site Carbon Capture/Sequestration		
8 Carbon-free Energy Production		arbon-free Energy Production	On-site/Off-site Renewable Energy Production		
	7	Building Controls	Use Aligned Device & Equipment Management		
6 Procurement		5 Procurement	Local, Carbon-free Material Sourcing		
		5 Electrification	100% Electric Energy End Uses		
		4 HVAC	Passive First, Low-gwp Refrigerant Next HVAC		
		3 Building Envelope	Low-embodied, High Performing Envelope	ISSIONS	
		2 Structure	Low-embodied Carbon Structure	SON EM	
		1 Siting & Smart Programming	Efficient Space Planning, Form fit for micro-climate	CARE 100%	

PATH TO CARBON NEUTRALITY

<u>05</u> Reporting Plan

At DLR Group, we have developed a comprehensive plan to measure, track, and report embodied carbon data, ensuring that we consistently evaluate and reduce carbon emissions in our projects. Our approach involves a detailed accounting of embodied carbon for eligible projects throughout the design and construction phases.

ELIGIBILITY AND TRACKING PROCESS

DLR Group has established a threshold to identify which projects are eligible for tracking embodied carbon. Once a project meets this threshold, we initiate a structural Life Cycle Assessment (LCA) at each design stage, starting from the early conceptual phase through construction documentation (CD). These assessments allow us to track the carbon reductions as the design progresses and benchmark the performance of each project against similar ones. We measure carbon emissions through each design iteration to understand the impact of material choices and structural optimization.

The data gathered from these LCAs, including both embodied carbon and operational carbon metrics, will be collected in the **Getting to Zero Dashboard**. The development of this platform is under development, and once it is complete, it will provide a holistic view of a project's sustainability performance, allowing us to make data-driven decisions and adjust the design to achieve carbon reduction goals.

EPD DATA COLLECTION AND MATERIAL SELECTION

To ensure the accuracy of our embodied carbon calculations, we prioritize the use of Environmental Product Declarations (EPDs) when specifying materials. We are currently refining our specifications to request the appropriate EPDs for all materials that contribute to embodied carbon. This involves early communication with contractors to align on embodied carbon reduction goals and ensure that the necessary material data is available. By coordinating with suppliers and contractors early in the process, we ensure the selection of low-carbon materials wherever possible.

LIFE CYCLE ASSESSMENT (LCA) SOFTWARE

We use several industry-leading LCA tools to quantify embodied carbon throughout the design process. For early-stage design, we rely on C.Scale and Cove Tool, which allow us to perform quick carbon assessments during conceptual and schematic design phases. As the design progresses to design development (DD) and construction documentation (CD) phases, we use Tally, an LCA software integrated with Revit, to perform more detailed analyses of embodied carbon. The LCA enables us to capture the full carbon story, including the impacts of various material choices, structural systems, and design optimizations.

LCA SCOPE

The scope of our LCA covers the entire lifecycle of the building, from materials extraction through construction, operation, and eventual demolition. Specifically, we are using Tally to complete LCAs across all phases, capturing embodied carbon from A1-A3 (product stage) through A1-A5 (construction stage), and extending through A-C (use stage) and A-D (end-of-life) when possible. This comprehensive approach ensures that we account for the full environmental impact of the materials and systems selected for each project.

MATERIAL QUANTITY CALCULATIONS:

To calculate material quantities, we rely on Revit models during the Design Development (DD) and Construction Documentation (CD) phases. Revit's built-in capabilities allow us to accurately calculate the quantities of materials used in the design, providing precise data for the LCA process. This ensures that the embodied carbon calculations are based on up-to-date and accurate material quantities, which are crucial for tracking progress toward carbon reduction goals.

Summary of Reporting to SE 2050

DLR Group has made significant progress in reducing embodied carbon and reporting through the SE 2050 platform.

In the $\ensuremath{\textit{first year}}\xspace$, we reported 5 projects, refining data processes along the way.

The **second year** saw an expansion to 25 projects, with Life Cycle Assessments (LCAs) conducted across different design phases.

By the **third year**, we completed LCAs on 30 projects, further refining our system.

This year, we reported 48 projects, demonstrating our commitment to sustainability and the effectiveness of our training and quality control in tracking and reducing embodied carbon.

Swarthmore College Community Commons and Dining Hall Swarthmore, PA

REFLECTIONS AND STRATEGIES FOR THE COMING YEAR

Over the past year, DLR Group has made significant strides in our efforts to reduce embodied carbon in our projects. We've accumulated a wealth of data through Life Cycle Assessments (LCAs) conducted across numerous projects, but we realized that we have not been fully utilizing this data to support our teams and drive impactful change. Much of this valuable information was stored in isolation, without being harnessed to inform decision-making or improve our design processes. This realization has been a key learning point for us.

In response, we have dedicated substantial effort to compiling and organizing this data into a revamped **Getting to Zero (GTZ) Dashboard**, which aims to centralize and better leverage our embodied carbon data. A major milestone in this effort was the hosting of our very first **Embodied Carbon Summit**. It was an incredible opportunity to bring together leaders, experts, and advocates from various fields to engage in critical conversations about embodied carbon reduction. The summit included a diverse group of participants, both in-person and virtual, representing disciplines such as technology, user interface and user experience design, as well as Design Forum Representatives. This gathering proved to be invaluable, as we engaged in meaningful sessions aimed at enhancing the capabilities of the GTZ Dashboard.

Through these discussions, we identified several key challenges that have hindered our progress:

- 1. Unutilized Data: While we have conducted numerous LCAs, this data has often been stored in individual project folders and used solely for reporting on our commitments, without being leveraged to its full potential. This process has limited our ability to use the insights gained from these assessments to inform future projects and optimize our sustainability efforts.
- 2. Lack of Centralized Data: Our data was fragmented across various teams and platforms, preventing us from having a holistic view of our carbon performance across projects. As an integrated design firm, we realized that we were not pooling our data into a centralized warehouse, nor were we displaying it in a way that allowed us to see the bigger picture of our sustainability efforts. This lack of integration restricted our ability to make informed decisions and adopt a more comprehensive approach to carbon reduction.
- 3. Siloed Thinking on Carbon: Operational and embodied carbon have traditionally been treated as separate issues, with each area managed by different teams and not always considered together. This siloed thinking has prevented us from maximizing the potential of both embodied and operational carbon reductions, which, when addressed holistically, can drive significant improvements in overall carbon performance.

During the summit, we took action by defining the scope of the **Getting to Zero Dashboard** and how both operational and embodied carbon would be incorporated into the platform. The redesigned GTZ Dashboard will serve as a centralized tool for tracking, reporting, and communicating performance trends for carbon, helping us to make better-informed decisions and streamline our sustainability efforts.

The summit was a productive and inspiring experience, generating actionable items that will be implemented over the coming year. With a clearer purpose and a more integrated approach, the GTZ Dashboard will be a key tool in our commitment to reducing embodied carbon across our projects. We are excited to continue refining and updating the dashboard and look forward to sharing future progress as we work toward making a measurable impact on our carbon performance.

