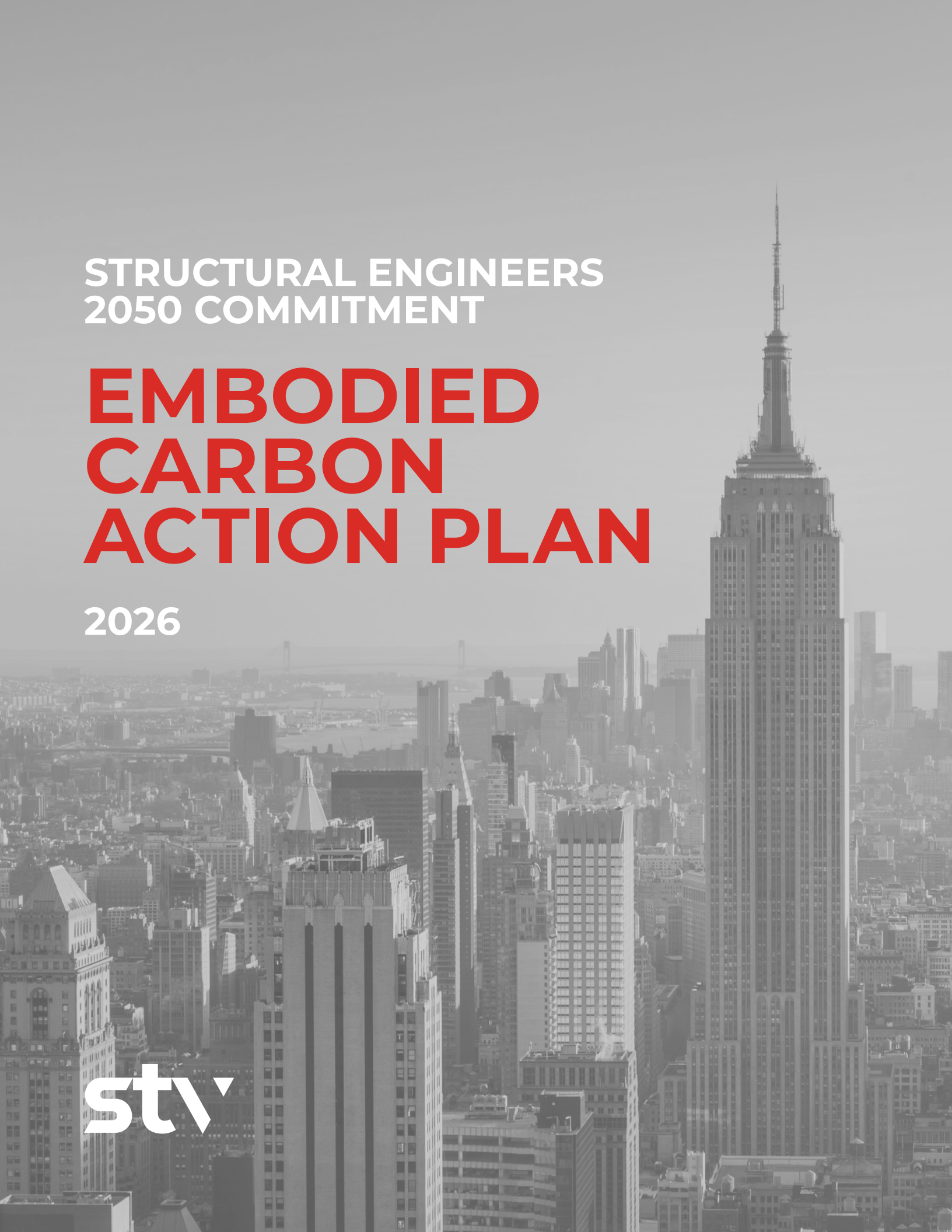




STRUCTURAL ENGINEERS
2050 COMMITMENT

EMBODIED CARBON ACTION PLAN

2026



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FOREWORD

Embodied carbon refers to the greenhouse gas emissions associated with extracting, producing, transporting, installing, maintaining, and disposing of building materials used within design and construction processes. For structural systems in particular, these emissions represent a significant portion of a project's total embodied carbon footprint. The Structural Engineers 2050 Challenge (SE 2050) was established to empower structural engineers to measure, benchmark, and progressively reduce embodied carbon, with the ultimate goal of achieving net zero embodied carbon in structural designs by 2050.

In recent years, policies, standards, and disclosure requirements addressing embodied carbon have accelerated across the United States and globally. As designers and stewards of the built environment, structural engineers play a critical role in translating these drivers into practical, durable solutions that balance performance, constructability, and long-term value.

At STV, our SE 2050 commitment represents both a responsibility and an opportunity: to collaborate, innovate, and lead alongside our clients and industry partners and shape people-centered communities for measurable, real-world value. Through early engagement, cross-disciplinary coordination, and data-informed decision-making, we are advancing strategies such as material optimization, circular design principles, and evaluation of lower-carbon structural systems. This 2026 Embodied Carbon Action Plan builds on prior years of progress and lessons learned, outlining clear, actionable steps to further integrate embodied carbon considerations into our design practice. We remain inspired by the collective momentum of the SE 2050 community and committed to contributing to a more sustainable built environment that supports healthy, resilient communities, guided by our optimism for the future.

As the Architect and Engineer of Record for the Newark Liberty International Airport Terminal A redevelopment, STV helped deliver a world-class facility defined by resilience and modern efficiency. The project's LEED Gold Certification underscores a deep commitment to sustainability, realized through high-performance electrical and lighting systems, low-flow water fixtures, and a strategic material palette designed to mitigate the urban heat island effect.



LESSONS LEARNED

As we enter the fourth year of our SE 2050 Commitment, we have gained more consistent application, coordination, and accountability. Our teams have built meaningful experience applying embodied carbon reduction strategies across a range of project types and delivery contexts. In doing so, we have deepened our understanding of where the greatest opportunities lie – and where challenges persist.

We have learned that progress is accelerated when embodied carbon considerations are introduced early, supported by shared data frameworks and reinforced through collaboration across disciplines, offices, and partners. We have witnessed the value of building and sharing collective knowledge by supporting our internal professionals, engaging clients with clarity, and contributing to broader industry learning. Our multidisciplinary approach informs the strategies outlined in this Action Plan and help us continue advancing embodied carbon reduction efforts in 2026 and beyond, in alignment with the evolving leadership of the SE 2050 initiative.

1. Early client education meaningfully influences outcomes.

Engaging clients on embodied carbon at the earliest feasible stages of design enables more informed, realistic decision-making and expands the range of viable reduction strategies. Early discussions help position embodied carbon as a design performance consideration, allowing teams to balance structural efficiency, material selection, and constructability more effectively.

2. Cross-disciplinary alignment is essential for scalable reductions.

Meaningful embodied carbon reductions are most achievable when structural, architectural, and building systems teams are aligned early and communicate consistently throughout the design process. Projects with intentional cross-disciplinary coordination are better positioned to identify high-impact opportunities and avoid downstream conflicts that limit reduction potential.

3. Data maturity improves with iterative use and standardization.

Embodied carbon analysis benefits from an iterative approach that evolves alongside project development. Early-stage, order-of-magnitude tools are effective for informing conceptual decisions, while more detailed methods become valuable as design advances. Over time, the need for consistent assumptions, data structures, and workflows has become clear, reinforcing the importance of standardized data collection to support comparability across projects. Our consistent data backbone also helps us embed sustainability into everyday practice, supporting informed decision-making at scale.

4. Market interest is increasing, but practical barriers remain.

Client awareness of embodied carbon continues to grow, particularly as regulatory requirements and disclosure expectations evolve. However, unfamiliarity with metrics, perceived impacts, and regional material availability can still present challenges. These constraints underscore the importance of clear communication, early feasibility discussions, and supplier engagement. Despite these hurdles, industry momentum is accelerating, creating increasing opportunity for informed leadership and impact. STV is positioned to guide clients confidently through emerging standards, helping them navigate uncertainty with practical, actionable pathways.

**Text indicates 2026 goals derived from the lessons learned in the past year.*

EDUCATION INITIATIVES

1. Incorporate embodied carbon reduction strategies nationally.

Each STV structural engineering team will designate a local Embodied Carbon Champion. These individuals will quantify project data and track design decisions that reduce their embodied carbon impacts. Champions will convene monthly as a national network to share progress, coordinate data collection approaches, and accelerate adoption of emerging reduction strategies across projects. The group will compile best practices, tools for early analysis, and guidance for effective client communication.

2. Provide webinars focused on reducing embodied carbon.

Leveraging established educational resources, our team will ensure all project teams have access to foundational and advanced embodied carbon education through our internal sustainability page. Key topic areas, including Basic Literacy, Environmental Product Declarations (EPDs), Structural Systems, and Carbon Accounting will be highlighted to support informed decision-making across all phases of design and procurement.

**In 2026, we will expand firmwide participation in embodied carbon education and strengthen advocacy for lower-carbon solutions with colleagues, clients, and industry partners.*

3. Develop a digital library of embodied carbon resources for our team.

We are expanding our internal centralized digital library for embodied carbon resources. This will host curated tools, guidance documents, reference materials, and case studies to support project teams in consistently applying embodied carbon reduction strategies. These resources will align with evolving industry standards and best practices to support consistent application across projects.

4. Educate ourselves and our colleagues on embodied carbon concepts and skills.

We are training our structural engineers to measure, reduce, and report embodied carbon. STV's Digital Advisory team has developed an innovative in-house Carbon Dashboard that supports SE 2050 commitments and internal tracking efforts by enabling consistent analysis across projects. Our structural engineering teams are piloting this digital tool as a major step towards embedding embodied carbon tracking within our design workflow.

**In 2026, we will scale our in-house low-carbon toolkit, with targeted strategies for concrete and steel to support earlier decision-making.*

STV provided architectural and engineering design services for the expansion & renovation of P.S. 253K in Brighton Beach, Brooklyn, New York. Designed to align with New York City School Construction Authority's (NYCSCA) latest educational & sustainability standards, the addition features highly insulated exterior walls, efficient mechanical systems, rooftop solar panels, strategic elevation and equipment placement for flood protection, a new landscaped outdoor play area, and a two-story lobby with custom glass artwork.



REPORTING APPROACH

1. Submit our projects to the SE 2050 database.

We commit to submitting embodied carbon data for five structural projects in alignment with SE 2050 annual reporting requirements. This supports reporting that is transparent, consistent, and grounded in accurate, data-driven methodologies. Embodied Carbon Champions will compile and analyze project data to contribute to the development of industry baselines.

**In 2026, our in-house toolkit will strengthen our ability to perform embodied carbon assessments early-on and improve integration of assessments throughout the project lifecycle through cross-disciplinary collaboration.*

2. Internally track and analyze embodied carbon across our project portfolio.

STV's Carbon Dashboard will track the embodied carbon footprint of our structural designs, transforming operations to be more data-driven, predictive and

resilient. Portfolio-level analysis will allow our teams to identify recurring embodied carbon hotspots associated with structural systems and material selections. Trends, insights, and best practices will be shared nationally to inform future design decisions.

**In 2026, we will continue to extend beyond structural systems to include architectural and MEP.*

3. Include structural material quantities.

We recognize that combined embodied carbon data without associated material quantities limits transparency and interpretability. Our reporting approach will prioritize inclusion of structural material quantities to support data validation, identification of outliers, and future analytics. This approach will improve industry understanding of high-impact structural opportunities and support more meaningful benchmarking.

A cornerstone of the New York State Office of Mental Health's (OMH) modernization efforts, the South Beach Psychiatric Center Residential Building represents a new standard for patient-centered care. STV provided comprehensive architectural and engineering services to deliver a facility that balances a therapeutic, healing environment with a high-performance building envelope. Built to withstand the unique challenges of its Staten Island coastal location, the design integrates advanced flood mitigation and resilient infrastructure to support continuous care during future storm events.



REDUCTION STRATEGIES

1. Set both short-term and long-term reduction targets.

Reduction targets strengthen the ability to measure embodied carbon impacts and identify opportunities for improvement. We will establish firmwide short-term (<1 year) and long-term (>5 years) reduction targets to track progress, compare performance over time, and drive continuous improvement. Targets will be periodically reviewed and refined as data quality and industry benchmarks evolve.

**In 2026, we will align reduction targets with improved data collection and monitoring practices to support measurable progress toward long-term goals.*

2. Cross-disciplinary collaboration through sustainability-focused design charrettes.

Early-stage design decisions present the greatest opportunity for partnership in embodied carbon reduction; we will continue to integrate sustainable design considerations early in the design process through structured design charrettes. These sessions evaluate embodied and operational carbon reduction opportunities together, identify high-impact strategies, and promote coordinated, standardized decision-making across disciplines.

**In 2026, we will further integrate embodied carbon evaluations earlier in the project lifecycle to influence foundational design decisions.*

3. Communicate embodied carbon reduction opportunities to clients.

Structural engineers will leverage early-stage modeling tools to compare embodied carbon impacts across preliminary structural design options. This approach enables informed evaluation to guide clients through viable reduction strategies and supports clear, effective communication with clients early-on.

**In 2026, we will continue to improve firmwide fluency in articulating embodied carbon impacts and responsible reduction pathways.*

4. Update specifications to incorporate embodied carbon performance.

Project teams will reference SE 2050 specification guidance, including resources for whole building approaches, structural steel, cast-in-place concrete, mass timber, and concrete masonry units. We will pilot updated specifications and share best practices nationally to increase adoption of lower-carbon solutions.

**In 2026, we will expand guidance and knowledge-sharing around specification improvements to support robust, consistent implementation across projects, such as including carbon reduction targets that can withstand and anticipate evolving industry baselines.*

Prioritizing the link between nature and recovery, the South Beach Psychiatric Center Residential Building prioritizes a direct connection between the natural environment and patient recovery. The design featured expansive glazing and high ceilings to fill treatment spaces and corridors with natural light, providing patients with clear views of the adjacent state park. To support long-term operational resilience, the recreation yards and surrounding grounds were elevated above the 500-year floodplain to protect the therapeutic, LEED-Silver facility.



ADVOCACY EFFORTS

1. Proudly share our commitment to SE 2050.

We acknowledge the critical role embodied carbon plays in decarbonization and the responsibility of structural engineers in addressing it. We actively support and promote our SE 2050 commitment as part of STV's dedication to improving our communities.

2. Communicate the value of SE 2050 to our clients.

We will continue to engage with clients through presentations, industry events, online platforms, and visualization tools to communicate embodied carbon reduction strategies and emerging requirements. Our teams will support informed decision-making by continuing to reference high-impact tools such as SE 2050's ECOM and discussing feasible pathways toward decarbonization.

**In 2026, we will continue helping clients navigate evolving regulatory requirements and reduction goals with clarity and confidence.*

3. Externally present a project's success in reducing embodied carbon.

As we continue to document sustainable practices and track embodied carbon performance, successful case studies will be shared with clients and industry audiences through conferences, presentations, and educational outreach.

4. Engage with local material suppliers.

We aim to engage with local material suppliers to support their development of Environmental Product Declarations (EPDs) and identify opportunities for lower-carbon specifications and procurement strategies, deepening our collective impact.

5. Industry Advocacy

STV actively collaborates with industry partners to advance embodied carbon measurement and reduction efforts across building and infrastructure assets. This includes leadership in ASCE Infrastructure 2050, a collaborative initiative aligned with SE 2050 and developed in partnership with the ASCE Committee on Sustainability.

As a key member of the ZEBGO Partners joint venture, STV provides specialized technical consulting for the Los Angeles County Metropolitan Transportation Authority's (Metro) ambitious Zero Emissions Bus Program. This transformative initiative is set to transition Metro's entire fleet and supporting maintenance infrastructure from compressed natural gas to zero-emission technology by 2030. STV's role is critical in navigating the complex engineering and operational shifts required to meet one of the nation's most accelerated clean-transit timelines.





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