

SE 2050 Embodied Carbon Action Plan

2024



ballinger

Introduction

The challenges that are easiest to meet are rarely the challenges that need us the most.



Since our beginnings, Ballinger has worked to artfully integrate architectural aspiration with engineering acumen to achieve each project's mission. Ours is a design culture, where experience and analytical tools ensure that complex, resource-intensive projects are environmentally responsible in both design and operation. Our interdisciplinary teams collaborate toward solutions that require disciplinary synthesis: the deep integration of architecture, planning, interior design, and engineering is key to achieving excellence in the design of transformative environments.

Our clients operate at the forefront of research, practice, and teaching that contributes directly to communal health. With core missions of knowledge sharing, innovation, and wellbeing, our clients help lead in visioning and realizing a more sustainable future as they educate the future leaders of our society and economy.

As architects, engineers, interior designers, and planners, we have a professional and ethical responsibility to our clients and the communities we serve to steward our shared resources and the built environment. Given the scale and often energy-intensive project types we work within and the collective footprint of our work, Ballinger is positioned to significantly reduce the environmental impact of the built environment.

As a firm, we overwhelmingly view holistic sustainability measures – reducing our carbon footprint, promoting health and wellbeing, and implementing an equitable and inclusive design process – as an integral measure of design excellence. We are committed to advancing our sustainability performance as a firm and further establishing ourselves as sustainability leaders, more broadly leveraging our strengths as a collaborative, interdisciplinary practice.

The Ballinger Sustainability Action Plan 2.0

Representative of our firm ethos, we have recently engaged in a collaborative, interdisciplinary evaluation to develop the Ballinger Sustainability Action Plan 2.0. Through this effort, we have reviewed sustainability successes and achievements to date, and initiated a process of self-critique toward elevating our performance across all sustainability measures on each of our projects.

The Ballinger Sustainability Action Plan (SAP) supports the advancement of sustainability performance in our work through the following:

- Firm-wide commitments across eleven design and operational measures
 - 1** Equity
 - 2** Site
 - 3** Water
 - 4** Operational Carbon
 - 5** Embodied Carbon
 - 6** Resiliency
 - 7** Wellbeing
 - 8** Post Occupancy Evaluation (POE)
 - 9** Knowledge sharing
 - 10** Community
 - 11** Operations
- A consistent, intentional design process to support project teams in meeting these commitments
- Accountability measures to gauge our process
- Operations recommendations to reduce Ballinger's day-to-day impacts while enhancing health and wellbeing in our work environment

Central to Ballinger's commitment to resource stewardship is the recognition of the unparalleled role that creating, renovating, and operating buildings contributes to greenhouse gas (GHG) emissions. To this end, we have committed to the decarbonization of new and existing buildings – a commitment formalized in our active participation as signatories to the AIA 2030 Commitment, MEP 2040, and SE 2050 programs.



Embodied Carbon Action Plan

Education

One of the most impactful ways Ballinger can contribute to sustainable development is in education of our current and future professionals, clients, community members, and leaders to contribute to the requisitely multi-faceted creation of a truly sustainable future. Ballinger, as a multi-disciplinary firm, has the unique opportunity to learn from and educate one another in all aspects of the design process.

Checklist

REQUIRED

- Present Boston Society of Architects, “Embodied Carbon 101: Structure” during biweekly structural team meeting. Also, post link to “Embodied Carbon 101” series on company intranet site.
- Embodied Carbon Reduction Champion: Ballinger’s ECRC is also the structural studio leader and a member of the Firm’s Sustainability Action Plan Group. The ECRC uses those roles to advocate for embodied carbon reduction in Ballinger’s work at Firm- and project-wide levels, including changes to specifications, conducting LCAs, and encouraging designs with reduced concrete quantities. The ECRC and structural group has also been encouraging the use of mass timber during the conceptual design phase of projects, in the hope of branching into that field of structural design to reduce embodied carbon.

ELECTED

- Include “Embodied Carbon 101: Basic Literacy” and Embodied Carbon 101: Structure” webinars from Boston Society of Architecture as part of the new hire structural engineer on-boarding program.
- Give a ‘lessons learned’ presentation to the Ballinger Sustainability Action Plan group on a recent concrete-heavy project that exceeded the benchmark embodied carbon intensity values.

Reduction Strategy

Ballinger aims to integrate embodied carbon reduction into our design process where possible. Current strategies include using performance-based concrete mix designs that require supplementary cementitious materials, listing maximum allowable embodied carbon values on the design drawings, and conducting LCAs to compare designs.

Checklist

ELECTED

- All new projects use revised concrete specifications and performance-based concrete mix designs that incorporate embodied carbon performance requirements.
- Ballinger promotes and participates in LEED/Sustainability design charrettes.

Reporting

Ballinger is submitting LCAs for two projects in the 2024 report. We have selected a steel-framed 2-story, 30,000 sq. ft. public safety and community outreach project and a concrete and steel-framed 2/3-story museum project for submission this year. These projects were selected for submission in the second year in order to continue expanding the variety of projects with data.

Checklist

REQUIRED

- Submit two (2) projects to the SE 2050 database

Embodied Carbon Action Plan (Continued)

Advocacy

We are continually populating our firm intranet, B:hive, with sustainability resources across all disciplines. This firm-wide resource is a hub for all things sustainable, enabling us to share resources and report our project data. We also encourage everyone to participate in educational communities, such as the Carbon Leadership Forum, and more locally, the Delaware Valley Association of Structural Engineers (DVASE) and their Sustainability Committee. We want to educate ourselves and learn from other firms in our area.

Checklist

REQUIRED

- Describe the value of SE 2050 to clients: Ballinger has developed a Sustainability Action Plan that accompanies marketing materials and proposals. The Plan includes Ballinger's commitment to SE 2050, as well as AIA 2030 and MEP 2040, as part of a comprehensive approach to sustainability design and lowered embodied carbon.
- Share Ballinger's commitment to SE 2050 on our company website

ELECTED

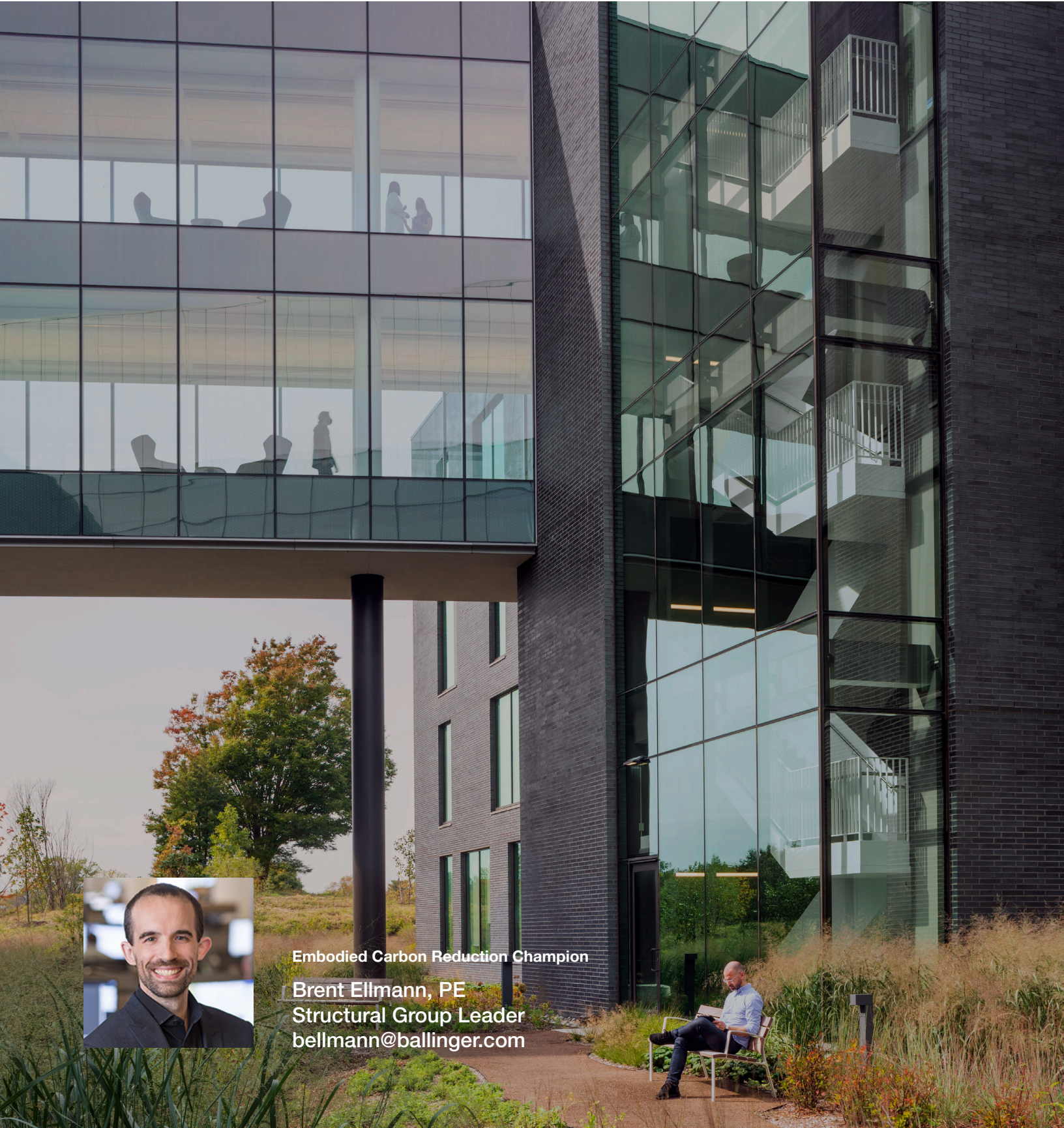
- Ballinger is currently designing a large concrete-framed multi-phase research facility. The client requires the use of concrete mix designs meeting GSA's Low Embodied Carbon Concrete Standards. The structural team, working with a sustainability design consultant, is engaging area suppliers to provide mix designs meeting these requirements to inform the on-going structural design.

Lessons Learned

- Engineers have used their LCA experience to improve the data that is modeled in the BIM process. The Ballinger Structural Revit User Group is working to include modeling data in the standard Revit model template that allows for a more streamlined LCA process using Tally.
- One of Ballinger's major areas of design expertise as a Firm is in higher educational facilities. Several of the early reported LCAs for SE 2050 were in this category and showed that our typical designs are at or below the 2017 CLF benchmark.
- Ballinger reported a recent public assembly/museum project that utilized extensive exposed concrete in a below grade structure that dealt with a high flood level. We learned this combination of factors led to a significant increase in embodied carbon and are developing lessons learned to help mitigate this on future projects of this type.

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