



EMBODIED CARBON REDUCTION CHALLENGE

THE CHALLENGE: REDUCE UPFRONT CARBON OF BUILDINGS

ENTRIES DUE APRIL 3, 2024 | 5:00 PM

A photograph of a construction worker from a low-angle perspective, looking up. The worker is wearing a white t-shirt with a yellow logo, a white baseball cap, and is using a yellow and black power tool on a wooden beam. The background is a clear blue sky.

SUBMISSIONS GUIDELINES

EMBODIED CARBON REDUCTION CHALLENGE PROJECT SUBMISSION GUIDE

Unlike operational carbon emissions, which can be reduced over time with building energy efficiency renovations and renewable energy, embodied carbon emissions from building materials have irreversibly entered the atmosphere as soon as a building is built. That means the upfront building material choices are critically impactful. And as new construction operations become more efficient, embodied carbon impacts become even more significant. [MassCEC](#) has engaged Built Environment Plus (BE+) to conduct an Embodied Carbon Challenge for actual new construction and major renovation projects in process or built in Massachusetts.

Have you been working to reduce embodied carbon on a project? Submit your project for award consideration. This document guides you through the submissions process and outlines the steps to submit a complete application.

COMPETITION

March 28,
2023

April 3,
2024

April
2024

June
2024

THE JUDGING CRITERIA

Judges will score the projects on a scale of 0-100 using the following criteria:

Replicability and Cost Effectiveness: 35%

- Proposed measures can apply broadly and cost effectively to projects across the state.
- Proposed measures use commercially and widely available building materials and equipment.
- Building design changes and building changes can be implemented by existing workforce or with modest investments in workforce training.
- General cost estimates for changes are reasonable based on evaluation of MassCEC and review

Reduction in Embodied Carbon: 35%

- Percent Reduction in Embodied Carbon as demonstrated by difference in WBLCA.
- Baseline WBLCA assumptions are reasonable as to what project would have done in the absence of focusing on reduction in embodied carbon.
- How carbon per square foot compares to other buildings of similar building types.

Innovativeness: 30%

- The changes to reduce embodied carbon are new applications of design or material changes.
- This approach breaks new ground.

AWARD ENTRY RULES AND REQUIREMENTS

MassCEC will award up to \$380,000 of prizes for up to 12 projects that incorporate replicable, innovative, and impactful changes to reduce embodied carbon in building materials.

Project Requirements

In order for projects to be eligible for prizes projects must meet the following requirements:

- Be located In Massachusetts.
- Have over 20,000 square feet of floor area.
- Be an actual / real project that will be constructed.
- Projects in Design: Have at least started construction documentation phase of design by April 3, 2024.
- Projects Completed: Have reached substantial construction completion after June 1, 2023.
- Can be new construction or major renovation.
- Must be a whole building.
- There are no limits on project type or construction type.
- A project can only be submitted once.
- Any given project cannot receive more than one award with the exception of the People's Choice category.

Lead Applicant Requirement

Each project is required to be submitted by a Lead Applicant. The Lead Applicant can be:

- Any company/person on the Design and/or Construction Team including the Owner.
- It will be up to the discretion of the Lead Applicant how the prize is allocated to other team members.
- A Lead applicant can submit more than one entry and be on more than one team.
- A Lead Applicant will only be awarded a prize as the Lead Applicant once. The Lead Applicant can be on an additional winning project as a non-lead applicant team member.

Challenge Participation Requirements

Each Lead Applicant must send at least one employee to at least 3 of the designated related trainings offered by BE+ over the course of the Challenge. See more information on training opportunities. If you missed the live training watch the video and take the quiz to meet the requirement.

SUBMISSIONS REQUIREMENTS

Participation and Awards Submission is FREE. Participants will need to submit the following four (4) items for consideration:

- 1. Whole Building Life Cycle Assessment Reports** for the baseline and proposed / actual building. This is expected to be completed in Tally or One Click LCA unless otherwise approved by Built Environment Plus. This should be in PDF format. WBLCA requirements are as follows:

REQUIREMENTS FOR WHOLE BUILDING LIFE CYCLE ANALYSSIS (WBLCA)

- Conduct a cradle-to-grave life-cycle assessment of the project's structure, foundations and enclosure consistent with LEEDv4 Materials and Resources Building Life-Cycle Impact Reduction Credit requirements and demonstrate a reduction for Global Warming Potential (GWP) compared to an equivalent baseline building.
- The scope of the assessment should include, at a minimum, the following:

Life cycle stages A1-A3, A4, B4, C1-C4*

*Additional physical scopes or phases of life may be submitted, but are not required.

Physical Scope: Substructure, Superstructure, Exterior Enclosure

Environmental Indicators: Global Warming Potential (GWP)

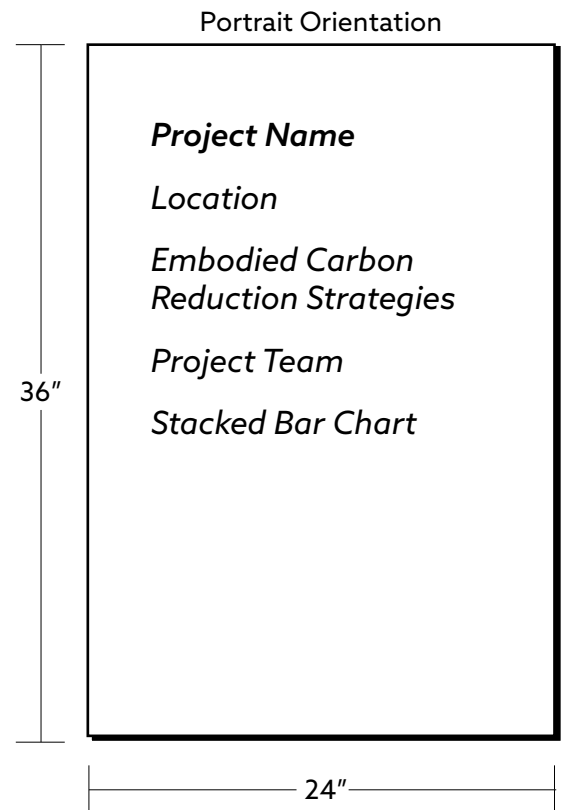
- The baseline and proposed buildings must be of comparable size, function, orientation, and operating energy. The service life of the baseline and proposed buildings must be the same and at least 60 years to consider impacts from replacement and end-of-life. Baseline assumptions must be based on industry standard design and material selection for the project location and building type. The team must use the same life-cycle assessment software tools and data sets to evaluate both the baseline building and the proposed building, and report the Global Warming Potential (GWP) impact category at a minimum. Data sets must be compliant with ISO 14044.
- 2. Download, complete, and upload the [Carbon Leadership Forum WBLCA Reporting Template](#)** for baseline and proposed. This should be submitted as an Excel/ spreadsheet file.

3. A Digital Poster that describes the project and Embodied Carbon reduction strategies.

BE+ will be handling the printing, fabrication, transportation, and displaying of your board.

All you need to do is create a compelling graphic presentation of your submission and match the following requirements:

- 24" x 36" PDF
- Portrait orientation.
- No crop & bleed marks.
- 10MB file size limit
- Text, diagrams, photos, or other graphic elements allowed.
- Must include a stacked bar chart of the proposed vs. baseline in units GWP/m² broken down by foundations, structure, enclosure, interiors, site/landscaping, MEP, and FF&E as applicable.



4. Complete the [Embodied Carbon Challenge Submissions Form](#)

- Lead Applicant company and submitter's information (first and last name, title, email, phone number).
- Attestation that Lead Applicant company has attended 3+ ECC events and/or trainings (visit the [ECC website](#) for full list of eligible events and trainings).
- Project's title, physical location, completion/anticipated completion date, gross square footage.
- Description of the project team.
- Project overview and summary of embodied carbon reduction strategies (<300 words)
- Written descriptions of the (1) replicability, (2) cost effectiveness, and (3) innovativeness of project's embodied carbon reduction strategies (<300 words each)
- PDF upload of WBLCA Reports for the baseline and proposed.
- Excel/spreadsheet upload of [WBLCA Reporting Template](#) for baseline and proposed.
- PDF upload of digital poster, 24" x 36".

FREQUENTLY ASKED QUESTIONS

Please check the [website](#) for an ongoing FAQ, updated as needed.

Still have questions? Running into problems?

Reach out to embodiedcarbon@builtenvironmentplus.org or call the office at 617-752-2422.

ABOUT MASSCEC

MassCEC is a state economic development agency dedicated to accelerating the growth of the clean energy sector across the Commonwealth to spur job creation, deliver statewide environmental benefits and to secure long-term economic growth for the people of Massachusetts. MassCEC works to increase the adoption of clean energy while driving down costs and delivering financial, environmental, and economic development benefits to energy users and utility customers across the state.

MassCEC's mission is to accelerate the clean energy and climate solution innovation that is critical to meeting the Commonwealth's climate goals, advancing Massachusetts' position as an international climate leader while growing the state's clean energy economy. MassCEC is committed to creating a diverse, equitable, and inclusive organization where everyone is welcomed, supported, respected, and valued. We are committed to incorporating principles of diversity, equity, inclusion, and environmental justice in all aspects of our work in order to promote the equitable distribution of the health and economic benefits of clean energy and support a diverse and inclusive clean energy industry. MassCEC strives to lead and innovate in equitable clean energy and climate solutions.

FINE PRINT

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