


SE 2050

EMBODIED CARBON ACTION PLAN





embodied carbon action plan

As designers who focus predominantly in the education sector, we strive to design great spaces for future generations to learn and grow. We acknowledge the requirement to do our part in reducing the use of natural resources, reducing the use of non-renewable energy sources and reducing waste production. Without following through on these reductions, impacts to those we aim to serve will be severe.

As engineers, we understand the internal structure of a building plays a large role in building-related greenhouse gas emissions. Our architectural counterparts signed onto the AIA 2030 challenge in 2019 and as fellow designers we have always felt it is our job to support the team in looking for sustainable solutions. Signing onto SE2050 reaffirms our commitment and accountability to the mission of sustainable design.

education

By signing on to the SE 2050 commitment we are asking our engineers to take a larger role in sustainable discussions; discussing the affect that architectural decisions can increase the embodied carbon of a structure and offer effective means to mitigate these impacts on projects.

Embodied carbon reductions is something that each of our offices strives for, and when it comes to structural reductions the champion serves as a point of contact for vetting ideas. Being in multiple offices makes some solutions more of a regional approach on a per office basis.

Building on our first year, there is a recorded version of our embodied carbon 101 presentation for people to reference in the firm. Additionally, the firm has been researching more embodied carbon reduction methods and tools to use in analysis. As these get vetted, they will then be presented to the firm.

Each year our SE2050 champion plans on giving at least one sustainable related presentation to the office offering ideas, lessons learned, and new ideas emerging for embodied carbon reduction.

As part of the commitment, Integrus architecture also plans to:

- Present an internal demonstrations for Tally, the LCA software being utilized.
- Share embodied carbon reduction strategies within the firm.

Our Embodied Carbon Champion is Morgan Wiese, PE, SE. He is also active member in the Structural Engineers Association of Washington's local Sustainability Chapter and attends monthly Carbon Leadership Forum meetings to further his knowledge of sustainable design and sharing what he learns with his peers at Integrus Architecture



Due to the requirements of open bidding for low-bid public work design, region-specific EPD's will initially be utilized during the design stages. Using product specific EPD's could make LCA's inaccurate for the variability that is seen on open bidding.

The requirements of EPD's will be in our specifications, providing teams more accurate GWP for buildings. Once we get the project specific data it can be reported, until that point however the regional averages will be used.

To provide a seamless internal work flow, Tally is the LCA tool that will be used due to the following benefits:

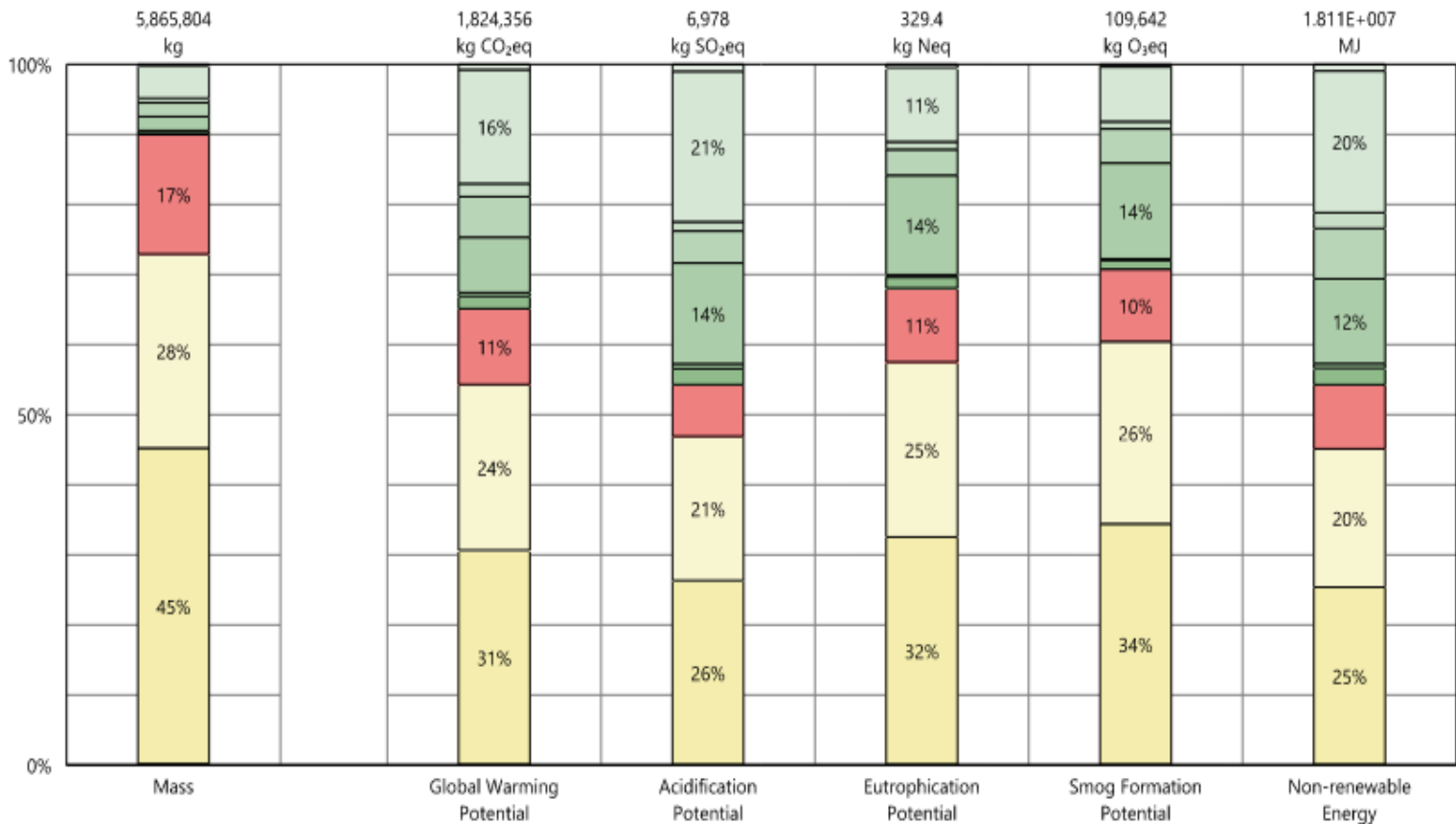
- Architectural team is already using it
- LCA assumptions have already been discussed for internal use
- Allows for easy integration into our current workflow.
- Relatively easy to pick up, allowing easier training for others to utilize as well.


The planned current workflow is:

1. Perform initial embodied carbon calculations during schematic design studying various schemes
2. Verify the quantities and assumptions during construction documents
3. During construction update the project with as many product-specific EPD's as possible.
4. Record all three stages to help build a database and baseline to build from.
5. Utilize the known information on new projects moving forward. With an emphasis on being part of the sustainability charrettes Integrus Architecture does with clients early on in design.

Integrus Architecture will submit the minimum of 2 annual projects to the SE2050 database, if not more as the projects allow.

Results per Division, itemized by Tally Entry





embodied carbon reduction strategies

Integrus Architecture is continuing to work on the process of creating baselines for projects due to the variety of material and projects types we work on. Our goal for structural reductions this coming year will be to reduce our structural embodied carbon usage by 10% from the current baseline with that value increasing as the years go on.

Our long term goal is in progress as we are having company wide discussions for all disciplines. Many material advancements have been coming out which maybe create an opportunity to accelerate our goals.

A big emphasis of our current reduction strategies is continued work with industry representatives to look for lower carbon solutions. Some examples of this are:

- Contacting local concrete suppliers to revise our specifications to receive lower EC mixes.
- Contacting AISC to look at ways our steel is currently being sourced and ways to have further transparency with the steel we use on our projects.
- Working with local wood manufacturers to look at different cost effective ways to utilize mass timber on our projects while maintaining project budgets.
- Reaching out to the local Masonry Society to achieve more transparency in the CMU and Veneers we specify on projects.
- Working with our contractor partners on creative bid alternates allowing suppliers to provide alternate sustainable solutions and letting the owner make the final decision that suits their wants and needs.

This last year we have added embodied carbon performance criteria to our specification for all structural materials and have verifying materials compliance with also requiring EPD's.

advocacy

In line with the SE2050 requirements we will be sharing our commitment to our clients during early project sustainability charrettes and describe to them what this means. We also will be including our SE2050 pledge into our proposal language.

In addition to the two requirements of the SE2050 initiative we also plan to do the following:

- Have our pledge on the company website along with a copy of our ECAP.
- Discuss EPD requirements and their value to owners
- Involve clients with using bid-alternates on structural materials to give them the option to opt for lower carbon materials. An example of this would be having the basis of design be “business as usual” concrete and the alternate being a 20% reduction in GWP concrete mix package.



lessons learned

- Which embodied carbon limits are feasible to require on projects.
- What the benefits and limitations are to Tally in tracking our embodied carbon
- Early teamwork and collaboration is more important than initially realized to implement the embodied carbon reduction strategies for the project.

