



User Benefits

EC3 Tool

Embodied Carbon in Construction Calculator (EC3) Tool

Overview

The EC3 tool is a free and easy to use tool that allows benchmarking, assessment and reductions in embodied carbon, focused on the upfront supply chain emissions of construction materials. The EC3 tool utilizes building material quantities from construction estimates and/or BIM models and a robust database of digital, third-party verified Environmental Product Declarations (EPDs). Powered by this data, the EC3 tool can be implemented in both the design and procurement phases of a construction project to look at a project's overall embodied carbon emissions, enabling the specification and procurement of low carbon options.

The EC3 tool also allows owners, green building certification programs and policymakers to assess supply chain data in order to create EPD requirements, and set embodied carbon baselines and reductions, at the construction material and project scale.

The tool and its subsequent effect on the industry is driving demand for low-carbon solutions and incentivizing construction materials manufacturers and suppliers to invest in disclosure, transparency and material innovations that reduce the carbon emissions of their products.



AEC Professionals

The EC3 tool enables simple sorting and visualization of materials supply chain EPD and embodied carbon data, and project level embodied carbon emissions data, to inform design specifications and procurement documents.

Architects and engineers now have a simple way to assess the total embodied carbon of their projects and identify opportunities for improvement based on their specification choices. The EC3 tool also moves the focus beyond comparing

between materials (i.e. wood vs. steel), to identifying and evaluating low carbon structural materials within each material. In addition, interior designers can sort primary interior finishes, such as carpet, gypsum wall board and ceilings to identify low carbon solutions.

The output and clarity of the data allows architects and engineers to clearly demonstrate to an owner the potential embodied carbon impacts of their project, as well as the opportunity for reductions. In addition, working with the general contractors, the established embodied carbon reduction targets can be verified through construction.

Business Impact: The EC3 tool enables celebrating the win/win opportunities that exist from simply asking the right questions at the right time. Because cost and carbon are looked at together during procurement decision making, the team of decision makers can choose where to be carbon aggressive, and where to be less so, while still making sure the overall project stays within carbon and cost budgets established upfront.

Embodied Carbon Impact: EC3 tool pilot results have shown that by simply being able to compare products with the EC3 tool, substantial reductions in embodied carbon can be realized.



Construction Project Owners

The EC3 tool enables simple visualization of a project's potential and realized embodied carbon impacts, with the ability to see baselines and set reductions targets.

Owners have the information they need to easily set embodied carbon performance targets. The EC3 tool enables owners to easily benchmark, track and reduce the embodied carbon of their project, alongside their operational carbon, while making informed carbon smart decisions on the construction materials they purchase. This new level of information allows for better financial and carbon footprint management, for both project risk and double bottom line decision making.

In addition, as policymakers and green building programs start to include embodied carbon in their legislative actions and certifications, the EC3 tool is poised to enable owners with the information they need to deliver compliance and reporting data for those policies and certifications.

Business Impact: Increasingly, owners are focused on both financial performance and achieving significant, positive environment impacts. Focusing on material quantities through the use of the EC3 tool and managing to a budget, designers can provide a more thoughtful and linear design process, with less surprises and clear objectives to the owner – offering a clear value to the construction project owners.

Embodied Carbon Impact: Owners that embrace this tool and its potential can drive the market transformation and thereby deliver high impact changes.

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Polymakers

The EC3 tool's data paves the way to easily inform procurement and building code level policies to be developed and supported.

As a free, transparent and easy to use tool, anyone can access the embodied carbon data from United States and Canadian EPDs for materials. It not only paves the way for engaged collaboration in the community, but it provides policymakers a trusted resource when setting embodied carbon procurement policy or building codes, and ways to quickly and easily track compliance.

The data for the EC3 tool is compiled in a standardized way and third-party assessments enable different policies to be developed based on unique requirements of the jurisdiction or organization. As a result, the platform can work as a reporting mechanism for various policies at the city, county, state and federal levels, as well as report results for certifications such as LEED, Living Building Challenge and Zero Carbon Certification.

Business Impact: Clarity of policies and building codes, matched with data derived from the EC3 tool, provides owners, designers and material suppliers the information they need to respond to market forces with greater ease.

Embodied Carbon Impact: Despite policymakers wanting to address carbon reductions, the area of embodied carbon emissions has essentially been ignored, sighting the complexity and difficulty to assess embodied carbon emissions. The introduction of the EC3 tool, a tool that can be used by all players in the construction industry, along with policymakers, delivers unprecedented ease of use and valuable, transparent information about embodied carbon in construction.



Material Manufacturers and Suppliers

The EC3 tool will bring new levels of awareness to product manufacturers and suppliers, rewarding them for their investments in low carbon materials innovation.

As embodied carbon becomes an environmental impact that is important to construction project owners and AEC professionals, material suppliers are experiencing an increasing demand for low-carbon materials and EPD data, while seeing a strategic market opportunity to differentiate themselves.

A significant first is the tool's digital format for EPDs — removing the cumbersome task of finding and reading unique PDF-based EPDs. By collecting EPDs in a single location with digital content, EPDs can be integrated into material databases and design and construction tools. Manufacturers who invest in EPDs will be recognized and the availability of information for use by owners, designers, contractors and policymakers will raise the visibility of the suppliers' low-carbon material offerings.

Fueled by this database of digitized EPDs, the EC3 tool not only provides a platform for material supplier buyers to quickly and easily access a supplier's EPDs and analyze those products (within the material category), but manufacturers can quickly understand how their emissions stack up to their competitors as well as the current maturity of EPDs and carbon emissions reduction within a material category.

Embodied Carbon Impact: Increased visibility and demand will spark the development for low-carbon processes and products and higher quality life cycle assessment data.



Sign Up Today

Visit <https://buildingtransparency.org> and register to access the EC3 tool.

Learn More

For more information on the Carbon Leadership Forum, its programs and initiatives, including the EC3 tool, visit www.carbonleadershipforum.org.

Resources and links include:



This EC3 Tool *User Benefits* document has been brought to you by the Carbon Leadership Forum. The Carbon Leadership Forum incubated the EC3 tool project to accelerate its development and provide optimal industry collaboration.

Who We Are

- The Carbon Leadership Forum is accelerating transformation of the building sector to radically reduce and ultimately eliminate the embodied carbon in building materials and construction.
- We are pioneering research, creating resources, and incubating member-led initiatives around this shared goal.
- We are architects, engineers, contractors, material suppliers, building owners, and policymakers who care about the future: we work collaboratively taking bold steps together for greatest collective impact.

Video: Bill Gates on manufacturing emissions

World Green Building Council report 'Bringing Embodied Carbon Upfront'

Embodied Carbon Facts and Figures

EC3 Tool: User Benefits

EC3 Tool: Key Features

EC3 Tool: FAQ

EC3 Tool: Primer for AEC Professionals