

Low Embodied Carbon and Carbon Sequestering Materials

Low embodied carbon materials and some carbon sequestering materials are already on the market and should be rapidly integrated into new construction and remodeling projects. Here are some examples to consider:

Replace standard cement with available low carbon alternatives. Concrete made with fly ash or slag has the potential to [reduce total emissions from concrete by about 40% and is now available](#) in many areas of the country. [Hollow core slabs](#) or wood floor structures are another option that can be used to replace standard concrete slabs. [Carbon sequestering cement that absorbs CO2](#) is in development and may be available soon, as will [carbon negative concrete](#) that absorbs CO2 from power plants during manufacture.

When it comes to using steel, reuse structural components from existing structures or use recycled [steel fashioned with electric arc furnaces, which reduce the carbon footprint by 50%](#). Use sustainably grown wood to construct [wood engineered commercial buildings](#) with [cross laminated timbers](#) for structural support. Sustainably grown wood [reduces embodied carbon due to the carbon sequestered during forest growth](#). Multistory wood-based commercial buildings [such as this Passive House Demonstration Project, in Boston](#) are being built [around the world](#).

Look for and select [lower carbon options in insulation](#), such as denim, sheep's wool, dense-pack cellulose, cork, hemp, and straw. [Cellulose, wool, and straw actually sequester carbon](#). [Straw-based, wool-based, bamboo-based, and cellulose-based](#) structural insulated panels (SIPs) are now available in the U.S. If you choose to use gypsum board, use the thinnest profile feasible. Finally, modern carpeting is highly carbon intensive, so be sure to select carpeting made from recycled materials or bio-based materials, such as wool. Alternatively, consider finishing the slab for flooring or using natural wood flooring.

Architecture 2030 has developed a [Carbon Smart Materials Palette](#) for architects, engineers, and builders that identifies the attributes of specific high carbon materials and suggests some alternative products and strategies for reducing embodied carbon. Lastly, it is important to design so that you get the most function out of smaller spaces. Doing so will take fewer materials for construction while providing the same benefit.