



Procurement Policies to Reduce Embodied Carbon

This document provides an overview of the opportunity for building owners, tenants, and developers to reduce greenhouse gas emissions of construction materials through their procurement policies. More information about opportunities for addressing embodied carbon with policy can be found in the [Carbon Leadership Forum’s Owner Toolkit](#).

Purchasing emissions are significant

Businesses have taken a leading role in setting emissions reductions targets from operations by committing to net-zero, purchasing renewable energy, and improving the efficiency of their building portfolios. A growing number of organizations are also addressing their supply chain emissions.

Supply chain emissions, also referred to as upfront embodied carbon, are the greenhouse gas emissions associated with the upstream extraction, transport, and manufacturing of materials before a product is sold to a consumer.

A company’s purchasing emissions are significant. Data collected through [CDP Supply Chain](#) in 2020 reveals that companies’ supply chain emissions are 11.4 times higher than their operational emissions on average (see Figure 1). This means that when companies strive for supply chain emissions reductions, they can have greater than 10 times the positive impact, creating a ripple of positive action throughout their value chains.

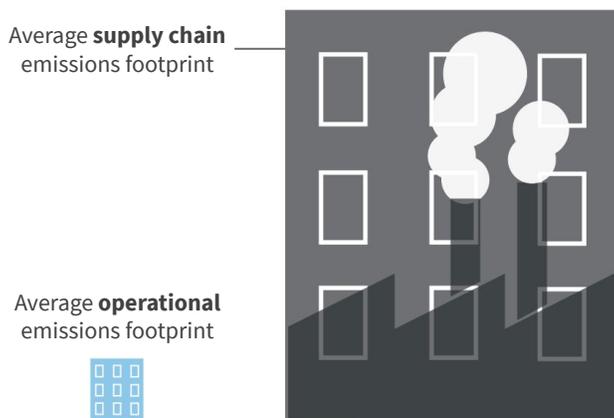


Figure 1. On average, a company’s supply chain emissions are 11.4 times larger than their operational emissions ([CDP Supply Chain](#)).

Investors, developers, and public and private building owners and tenants can leverage their purchasing power to decarbonize the supply chains associated with purchased products by adopting embodied carbon procurement policies to source low-carbon products and engage suppliers in targeting a net-zero supply chain. This document focuses on strategies for reducing these supply chain emissions that are related to construction materials.

Transparency is key

Requiring transparency from manufacturers enables companies to set emissions targets and track progress towards their goals. Many companies focus on using supply chain tracing and holistic supplier evaluation tools with key suppliers that they purchase directly from to implement their supply chain sustainability strategies and goals. However, limiting the focus to key suppliers may not influence sourcing of carbon-intensive construction materials purchased indirectly through a contractor on a project-by-project basis.

For building materials, life cycle assessment data can be collected in the form of an environmental product declaration (EPD) to help companies track and evaluate upfront embodied carbon, even when purchased by a third party.

What is an environmental product declaration?

An environmental product declaration (EPD) discloses a product’s environmental footprint. Type III EPDs are third party-verified documents written in conformance with standards established by the International Standards Organization (ISO) that report the environmental impacts of a product based on life cycle assessment.

EPDs may report a variety of life cycle impacts, including global warming potential (GWP). GWP is quantified in kilograms of CO₂ equivalent (kg CO₂e). *For more information, see [Guidance to Embodied Carbon Disclosure](#).*

Getting started

Whether getting started on a few pilots or integrating practices across a company’s portfolio, there are several key strategies to keep in mind:

- Start with a few high-impact materials that are typically purchased in large quantities
- Require transparency in the form of EPDs
- Evaluate products for carbon instead of just cost, and set emissions reductions targets for each material
- Track success by requiring project teams to submit material quantities and embodied carbon data

Table 1 provides a detailed summary of five key components of a procurement policy, from minimum to best practice.

Table 1. Summary of five key steps for designing a low-carbon procurement policy. Each step provides three-levels of action suited to organizations just getting started ('Good'), organizations with more experience implementing sustainable procurement requirements ('Better'), and sustainability leaders setting the standard for best practice ('Best'). The '+' indicates where requirements build on the previous column (e.g., 'Good' + 'Better' + 'Best').

	<i>Good (getting started)</i>	<i>Better (next steps)</i>	<i>Best (sustainability leaders)</i>
1 Set which materials and projects are included in the scope of the policy			
New construction	Start with structural materials (concrete, steel, and wood at a minimum)	Perform a whole building life cycle assessment of the entire building scope and include the top 10+ materials by impact (embodied carbon hotspots) in the policy	+ Include building envelope materials (insulation, aluminum, glass, and cladding at a minimum), and finishes (ceiling tile, gypsum board, and flooring at a minimum)
Tenant fit-out	Start with insulation, gypsum wallboard, ceiling tiles, and flooring (at a minimum)	+ Include additional interior elements where EPDs are already available (wall framing, data cabling) or use the CLF's TI calculator to identify your top 10 hotspots	+ Include additional finishes (furniture and millwork) and mechanical, electrical, and plumbing (MEP) elements (ducts, cabling, conduit, pipes, equipment, and insulation)
2 Establish embodied carbon data requirements for tracking compliance			
	Request EPDs for products identified in Step 1 in the project specifications. <i>Note: An EPD is not needed for reused (salvaged) materials. This does not include new materials with recycled content, which should be required to have an EPD.</i>	Require a product-specific Type III EPD for products identified in Step 1 and integrate requirements into project specifications and procurement policies. Identify key suppliers and send request letters to suppliers that do not have EPDs.	+ Provide funding and/or technical support for creating EPDs to suppliers, such as those that are small businesses, developing innovative low carbon materials, or meet supplier diversity requirements.
3 Set emissions targets for each product and how they will change over time			
	Adopt a 30% reduction target for cradle-to-gate global warming potential (GWP) from industry average for materials identified in Step 1.	Require the GWP of the installed product to be in the highest performing 20% of products, as defined by the 'achievable' baseline published in the CLF Materials Baselines or a high-performance target set by the company.	Set a company baseline and commit to reaching net-zero GWP by 2040 through adopting % reduction goals that increase over time, such as the targets published by Architecture 2030
4 Establish incentives for manufacturers/contractors to achieve high performance			
Performance	Include supplier emissions tracking and reduction efforts in quarterly or annual business reviews with suppliers.	Award a performance bonus at project completion to contractors that deliver project or materials below a predefined % emissions reduction target	Provide financial and/or technical support to suppliers to scale the development of low-carbon solutions.
Bids / RFPs	Score carbon impacts alongside price and other qualifications during bid selection.	Use embodied carbon data to adjust the price of each bid through shadow pricing or a performance discount rate (see Section 4.2 Steps to Develop a Buy Clean policy).	Require that bidders cannot be selected unless they meet a set of low carbon sourcing criteria
5 Create a system for tracking and measuring success			
	Create a system for tracking material quantities, embodied carbon data, and reductions on a project-by-project basis.	+ Publish progress towards targets externally through case studies and including embodied carbon targets in annual sustainability reporting.	+ Publish material quantity and embodied carbon data to an anonymous public database. For example, click "Anonymize and Publish" in the Embodied Carbon in Construction Calculator (EC3) tool.

Finding and requesting EPDs

Requiring suppliers to disclose embodied carbon data (via EPDs) is key to verifying progress towards emissions reductions goals. This section provides an overview of free templates and tools for getting started.



Templates: Collecting EPDs

Just like with other material certification requirements, EPD requirements and emissions targets should be included in developer/owner requirements and specifications to ensure success by alerting project teams as early as possible.

- [EPD request letter template](#) (Building Transparency 2020). This can be sent to product representatives to request EPDs. Letters can be sent for a specific project and material or in advance to key suppliers.
- [Model LCA specifications](#) (Carbon Leadership Forum 2018). This was developed by structural engineers to provide model language for inclusion in specifications to require embodied carbon data for structural materials.
- [Model bid document language](#) (Building Transparency 2020). This was developed for contractors/procurement teams to share with bidders for concrete, steel, insulation, glazing, aluminum for glazing systems, cold-formed metal framing, gypsum wallboard, ceiling tile, and carpet.



Tools: Finding EPDs

Building Transparency’s [Embodied Carbon in Construction Calculator \(EC3\)](#) can help teams locate EPDs using the “Find & Compare Materials” function that includes all North American EPDs for available material categories, focusing on the cradle-to-gate global warming potential of each product. As of April 2021, categories include concrete, steel, aluminum, wood, insulation, openings, finishes, and data cabling.

EPDs can also be found in sustainable material libraries that address additional material attributes like indoor air quality. Products with EPDs can be identified in [mindfulMATERIALS](#) library under ‘Environmental Profile’ and through the Sustainable Minds [Transparency catalog](#).

Setting baselines and reduction targets

While company-specific baselines are best for setting emissions baselines and reduction targets, material quantity and embodied carbon data from previous projects may not be readily available for use in calculating baselines.

The [Carbon Leadership Forum’s Material Baselines](#) can be used to help teams set baselines and targets for North American products. The CLF baselines are published annually and provide three baselines establishing achievable (low), typical (median), and baseline (high) values for each material based on North American product data. The 2021 baselines cover over 30 product types within concrete, steel, wood and composites, insulation, finishes, communications, and bulk materials.

The EC3 tool integrates the CLF baselines and provides similar values for products within a single search ([learn more here](#)). The “Plan and Compare Buildings” function can also be used to help project teams track progress towards targets.

A 30% or higher reduction can be achieved on most projects today with little or no increase in cost by focusing on just a few high-impact materials and using only readily available materials.

The LEED BD+C New Construction pilot credit “[Procurement of Low Carbon Construction Materials](#)” published in 2019 awards teams 1 point for low-range reductions (between 0-30%) and 2 points for mid-range reductions (above 30%) from baselines.

To reference examples of what public emissions reductions commitments companies are making related to embodied carbon, visit the Carbon Leadership Forum’s [Owner Toolkit](#).

➤ Case Study: LinkedIn Headquarters ◀

When constructing their new headquarters in Silicon Valley, LinkedIn was able to achieve a 30% reduction from industry average in upfront embodied carbon through procurement strategies alone by collaborating with their concrete supplier to procure a low-carbon blended concrete.

Learn more about LinkedIn’s headquarters case study and additional opportunities and strategies for reducing embodied carbon through procurement in [Breakthrough Energy’s Corporate Procurement Playbook](#).

- The Carbon Leadership Forum is accelerating the transformation of the building sector to radically reduce the embodied carbon in building materials and construction through collective action.
- We pioneer research, create resources, foster cross-collaboration, and incubate member-led initiatives to bring embodied carbon emissions of buildings down to zero.

