II. Environmental Product Declaration 101: Housing

Policies or programs that target the reduction of emissions from construction products need data to track and set limits for the emissions of different products. ***Environmental product declarations (EPDs)*** are standardized, third-party-verified documents that report the environmental impacts of a product based on a product ***life cycle assessment (LCA)***.

For manufacturers, EPDs are the best available mechanism for disclosing embodied carbon. EPDs also serve as the best mechanism for specifying and purchasing lower carbon products for designers and contractors.

In order to reduce embodied carbon using EPDs, project teams typically specify products that already have an EPD, or request EPDs very early in a project to set expectations for the contractor, suppliers and manufacturers. Creating new EPDs for products that don't already have these disclosures necessitates discussions with the suppliers or manufacturers to explore the feasibility and timeline to create an EPD.

EPDs start with a product life cycle assessment

A product LCA is a method for quantifying the environmental impacts of a product over its life cycle. EPDs disclose the results of product LCAs. LCAs can be also be done for buildings (read more in factsheet *III. Building LCA 101: Housing)* or infrastructure projects (read more here).

Greenhouse gas emissions, including carbon dioxide, are added up over the product's life cycle and reported as ***global warming potential (GWP)***, which is also known as embodied carbon**.** EPDs also include other environmental impacts, such as acidification, eutrophication, ozone depletion, and smog formation.

Environmental impacts across a product's life cycle are broken into four main stages: Product stage (A1-A3), Construction stage (A4-A5), Use (B), and End-of-life (C), as described in Figure 1. At a minimum, cradle-to-gate emissions (A1-A3) are included in an EPD.

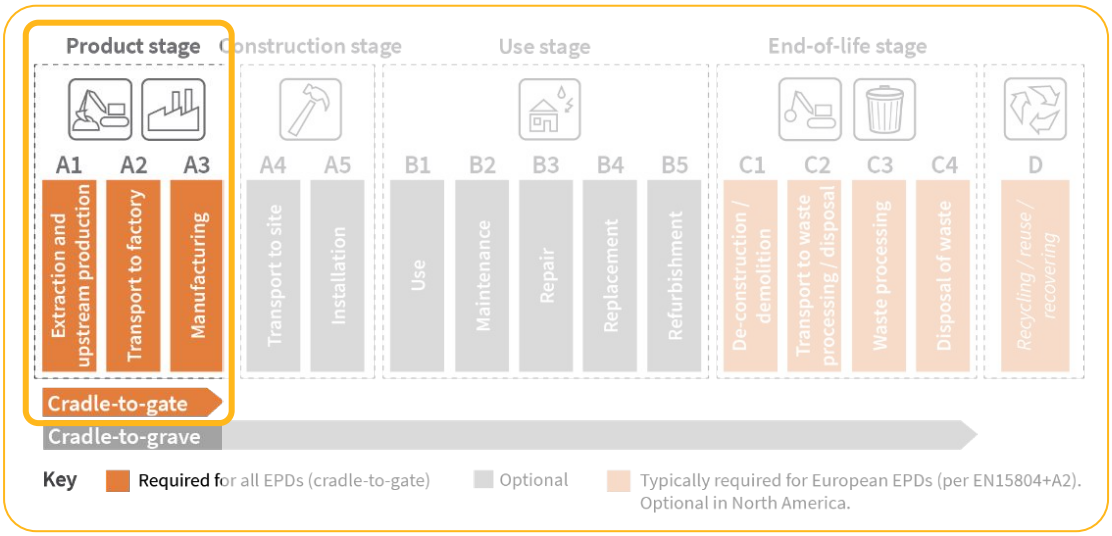

Figure 1. Life cycle stages typically included in North American EPDs. Module names are in accordance with ISO 21930. Product category rules (PCRs) dictate which life cycle stages are required, excluded, or optional.

In order to become an EPD, an ISO-compliant product LCA is then formalized based on manufacturer production emissions data collected, a background report is created to support the third party verification process. The third party verification then checks compliance of the LCA background report with international standards and the product's Product Category Rule (PCR). The committees that develop these standards use an open stakeholder development process that includes manufacturers, trade associations, users, government, NGOs, and LCA experts. Manufacturers then able to submit the epd for publication to program operators.

KEY TERMS

Environmental Product Declaration (EPD)

Standardized, independently verified documents that report the environmental impacts of a construction product based on a product life cycle assessment. EPDs must conform to international standards and follow the rules for each product category. An EPD is referred to as a "Type III environmental declaration" in ISO 14025: 2006.

Upfront embodied carbon emissions

CO2e emissions released during the product and construction stages before the building or infrastructure use begins, also referred to as "cradle to practical completion." The majority of a building's total embodied carbon is released upfront in the product stage at the beginning of a building's life, in life cycle stages A1-A5.

Manufacturers use EPDs to report product embodied carbon

Strategies for reducing the embodied carbon of a product can vary by material and facility. Manufacturers disclose the footprint of their product via an EPD, which helps them understand impacts and make targeted improvements to their product. EPDs are like a mileage rating on a car: they summarize key data to help purchasers compare similar products. Instead of mileage per gallon, EPDs provide the environmental impact per unit of product. They are often also described as nutrition labels for building materials. EPDs can only be used to compare products within the same product category that have the same function, also known as functional equivalence, as noted in CLF's 2025 Material Baselines Report.[1]

Many EPDs exist across North America, but some areas have more available than others. Concrete is a material that is still produced and delivered regionally, so asking your suppliers for EPDs is the best way to get started. For other product types that are more commercial (rebar, flooring, cladding, etc) it is best to use databases of EPDs to find compliant products, and then work with your design team and contractors to source these materials. See the section "How to find products with EPDs" for more guidance.

Types of EPDs

EPDs come in two overarching types - product EPDs and industry EPDs. The most common type of EPDs are those created by a single manufacturer (often called a "**product EPD**"), which reports impacts for a narrow range of a single manufacturer's products.

Product EPDs may be classified into "**facility-specific EPDs**" (based on data from a single facility) vs. "**manufacturer-average EPDs**" (based on averaged data from a manufacturer's multiple facilities).

In contrast, **industry-wide EPDs** report the impacts of a type of product based on data aggregated from a sample of manufacturers, often published via a manufacturing trade association. These EPDs cannot be used for complying with a policy, because they do not disclose the impacts of an individual manufacturer.

Figure 2. Annotation of key components of an Environmental Product Declaration (EPD) including sample of manufacturer, PCR, issue date and validity, EPD type and international standards.

How do I request an EPD?

The project team or owner may request EPDs for products by contacting a manufacturer directly. Building Transparency has created templates for EPD request letters that may be downloaded, revised, and adopted for your specific project.

Click here for the template EPD request letter for an individual company [2]

Click here for the template EPD request letter for a project team [3]

Concrete EPDs tend to be well-established and bountiful in most markets, especially when compared to other product types. When reaching out to concrete manufacturer to see if they can provide an EPD consistent with a program's requirements, include information about the concrete's weight classification (normalweight vs lightweight), compressive strength and any other performance criteria. During construction, the concrete mix submittal can be checked against the manufacturer-supplied EPD to ensure compliance.

KEY TERMS

Functional equivalence

A term defined for products which provide similar performance in their end-use application and fulfill the application's functional requirements. Product types have at least 1 attribute but may have more than 1 attributed that determine functional equivalence within the product. For example, concrete has 3 attributes (geography, weight classification, and compressive strength).

Product Category Rule (PCR)

A set of specific rules, requirements, and guidelines for conducting an LCA and developing EPDs for one or more product categories. Each category's PCR dictates methodological decisions that are relevant to the material supply chain of that product category (concrete, floor coverings, etc.). A PCR dictates which life-cycle stages and scopes must be included in the LCA, which background data sources are acceptable or mandatory, and other modeling choices such as allocation method and impact assessment method.

REFERENCES

1. Waldman, B., Habchi, R., and Palmeri, J. (2025). 2025 CLF North American Material Baselines Report. Carbon Leadership Forum.

2. EPD Request Letter for Individual Company. Building Transparency.

3. EPD Request Letter for Project Team. Building Transparency.

How to find products with EPDs

EPDs may be found on manufacturer websites, industry association websites, EPD databases (which function similar to electronic libraries), and/or by contacting your local supplier. The following steps are recommended approaches to finding EPDs for different product types:

For concrete or other locally-sourced products:

- Use the freely accessible tools (EC3[4], BuiltCold[5], or NRMCA's EPD website[6]) to search by product and geography to see which providers in your area may already have EPDs. These providers will likely be the most familiar with your request for an EPD.
- Use the tools to compare the GWP of the product to a baseline value for the same product types, such as those found in the CLF's 2025 Material Baselines Report.[1]
- For concrete, if you are not finding evidence that EPDs are available in your area from the tools above, ask your local suppliers if they can provide concrete mixes with lower than regional baseline global warming potential (GWP) values for the desired strength class.

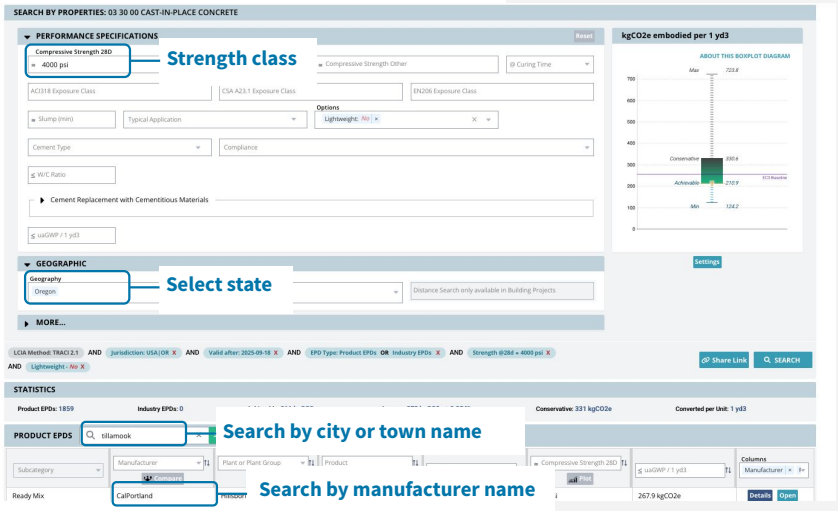

Figure 3. Snapshot depicting an EC3 search for normal-weight, 4000 psi concrete EPDs in Oregon

- **TIP:** EC3 includes a lot of search fields, especially for ready-mix. Complete the fields for essential product specifications, and it is fine to leave the rest blank. See Figure 3 to narrow your search results by strength class, state, city, and manufacturer.

For commercial product types (such as steel, flooring, cladding, gypsum, etc):

- Use the freely accessible tools (EC3[4], BuiltCold[5], Sustainable Mind Transparency Catalog[6]) to search by product to see which product types that are on the market already have EPDs.
- Ask your suppliers which products or manufacturers they source from. Use the tools to compare the GWP of the product to baseline values for the same product types, such as those found in the CLF's 2025 Material Baselines Report[1].
- Work with your supplier to procure the lower carbon products that have EPDs and will support your target reduction, if applicable.

EPD checklist: Minimum requirements

- ☑ The EPD is for the **exact product installed** on the project
- ☑ Conforms with **international standards** (ISO 14025 and ISO 21930)
- ☑ Has a **validity date** that is not expired
- ☑ Is **product-specific**

EPD checklist: Best practices

- ☑ Is **facility-specific**
- ☑ Reports the **% of supply chain-specific data** used in the LCA

Confirm that an EPD can be used

The project team should verify that the EPD(s) meets typical quality standards and requirements, including making sure the EPD(s) procured are for the actual installed product. During material procurement, designers should verify the applicability of the EPD associated with the intended product during the submittal process of the construction phase.

Policies and programs that require EPDs typically require valid, product-specific (or facility-specific) EPDs that meet the requirements of ISO 14025[7], ISO 21930[8], and the applicable PCR. EPDs are typically **valid** for five years from the date of issue. All EPDs state the date of issue and period of validity.

REFERENCES

4. Building Transparency. (2025). Embodied Carbon in Construction Calculator (EC3).

5. BuiltCold (2025). BuiltCold tool.

6. NRMCA (2025). Environmental Product Declarations.

6. Sustainable Minds (2025). Transparency Catalog.

7. International Organization for Standardization (ISO). (2006). ISO 14025:2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

8. International Organization for Standardization (ISO). (2017). ISO 21930:2017 Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services

Embodied carbon requirements should be documented in the design

Project drawings and specifications include the nitty-gritty details for the materials specified on the project. If a project has material schedules in the drawing set, or is publishing specifications as part of a bid document set, these are excellent places to include material requirements consistent with a project's embodied carbon goals:

- For smaller projects where the owner has a lot of control over procurement, lower carbon products or materials can be indicated in the drawing sets on the relevant assemblies or schedules, or in the project specifications by noting a basis of design product that meets the project requirements.
- For projects that are competitively bid and then built by a general contractor, embodied carbon requirements are often written into the specifications before bidding and take the form of requesting or requiring product-specific Environmental Product Declarations (EPDs) for key product types, and/or requiring that a specific product meet a maximum Global Warming Potential (GWP) limit per unit of product.

CLF has provided model embodied carbon specifications[9] as a starting point that can be adapted to a project's needs. Additionally, Rocky Mountain Institute's Emissions of Materials Benchmark Assessment for Residential Construction Report[10] provides housing case studies and the associated embodied emissions of the building materials typically found in this type of construction.

While drawings and specifications are an excellent method for conveying design intent, these product choices have to be actively carried out in construction to have the desired reduction outcome. This typically takes the form of reviewing any requests to use alternate products during the construction process often by reviewing and approving construction submittals for compliance with the requirements.

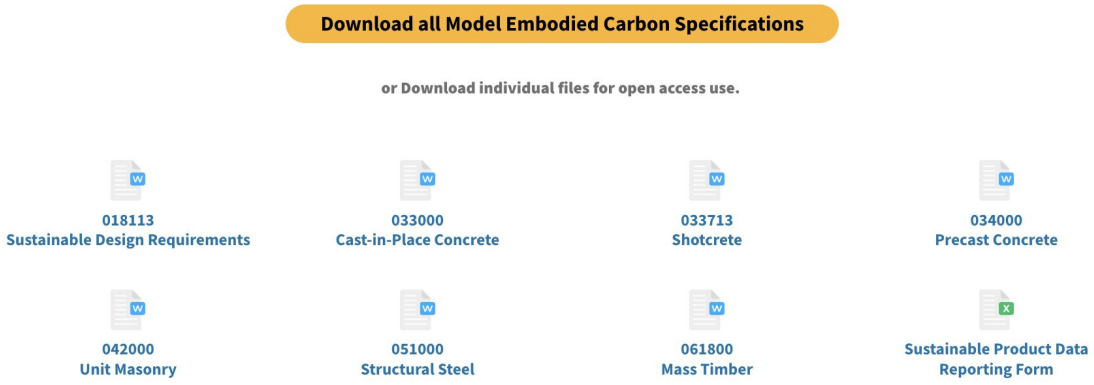

Figure 4. Snapshot of available template embodied carbon specifications available for use.

Additional Reporting in EPDs

In addition to environmental impact data, EPDs may also include the location of manufacturing facilities as well as supplementary information about the products or manufacturers that are of interest to programs in achieving environmental or social goals.

For example, Washington state requested that manufacturers provide information on working conditions for the facility represented in the EPD and chain of custody data related to the forestry sourcing for engineered wood as part of the Buy Clean Buy Fair pilot study.[11] Buy Clean Buy Fair Minnesota[12] will also include an assessment of employee working conditions at the product's production facilities as part of the pilot study included in the bill.

TIPS

CLF Model Specifications

Provides project requirements for environmental product declarations (EPDs) and global warming potential (GWP) limits for construction products. While these model specifications were developed for the Washington Department of Commerce to support compliance with the WA Buy Clean and Buy Fair (BCBF WA) legislation, they are useful for a broader range of projects/geographies and are offered here as a template to adapt to your needs.

REFERENCES

9. Rerick, L., Lambert, M. Palmeri, J. (2025). Model Embodied Carbon Specifications. Carbon Leadership Forum, University of Washington Life Cycle Lab, Washington State Department of Commerce.

10. Magwood, C., Bowden, E., Trottier, M. Emissions of Materials Benchmark Assessment for Residential Construction Report (2022). Passive Buildings Canada and Builders for Climate Action.

11. Huang, M., Lewis, M., Escarcega, P., Escarcega, E., Torres, M., Waterstrat, H., Kinder-Pyle, I., Simonen, K. (2022). Buy Clean Buy Fair Washington Project: Final Report. Carbon Leadership Forum and Washington State Department of Commerce.

12. Minnesota Legislature (2024).HB 2310. 4th Engrossment - 93rd Legislature (2023 - 2024).