

Implementation Approach for the U.S. EPA Label Program for Low Embodied Carbon Construction Materials

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Table of Contents

Executive Summary.....	1
Background	2
The Inflation Reduction Act of 2022	3
EPA’s Interim Determination and Related Federal Actions to Date	4
State and Local Government Buy Clean Initiatives.....	5
Label Program Stakeholder Engagement and Development	6
Guiding Questions That Informed the Label Program Approach	7
Objectives of the Label Program	7
Intended Label Use Cases and End Users.....	8
Scope of the Label Program.....	8
Life Cycle Stages	9
Material and Product Categories	9
Label Program Implementation	9
Phase I: Data Quality Improvement.....	10
Using PCRs	11
Minimum Requirements to Complete Phase I	11
Phase II: Threshold Setting.....	11
Tiered Label System	12
Developing Draft Thresholds	13
Seeking Stakeholder Input on Draft Thresholds	14
Minimum Requirements to Complete Phase II.....	15
Consideration of Private-Sector Standards and Ecolabels	15
Requesting Label Program Thresholds for Product Types Within a New Material Category	15
Phase III: Labeling Materials and Products	15
Conformity Assessment	16
Registry of Labeled Materials and Products.....	17
Label Implementation and Market Uptake Strategy.....	17
Estimated Program Timeline.....	18
References	20
Terminology.....	21
List of Abbreviations	23

List of Tables

Table 1. Intended Use Cases and End Users of the Label Program	8
Table 2. Possible Label Program Eligibility Criteria Under a Tiered Format	13
Table 3. Estimated Timing of Materials Moving through Phases I, II and III	18

List of Figures

Figure 1. EPA’s Low Embodied Carbon Construction Materials Program.	4
Figure 2. Three Phases of the Label Program.	10
Figure 3. Example Phase II Process for a Material Category and Associated Product Types.	12

Executive Summary

In support of [Inflation Reduction Act Section 60116](#), and to address the federal government’s significant contributions to greenhouse gas emissions, the U.S. Environmental Protection Agency is creating a label program to help purchasers identify construction materials and products with substantially lower levels of embodied carbon.¹ EPA invited and received extensive public input on the design of the new program. This document communicates key program elements and outlines the agency’s implementation strategy.

The label program will initially focus on asphalt, concrete, glass and steel products with lower embodied GHG emissions from the production stage (i.e., raw material extraction, transportation, manufacturing). While all products, regardless of where they are manufactured, will be eligible to be labeled under this program, to meet purchaser needs and ensure labeling is informed by consistent, comparable data, EPA will label products that have environmental product declarations built under North American product category rules. The label program is intended to assist with material/product selection after a decision on material type has already been made, and to complement a whole construction project approach.

To ensure longevity and replicability of the label program, and to allow additional materials to be included over time, EPA will implement the program using a phased approach that all material categories will be able to follow based on market maturity and data availability. These phases are:

- **Phase I: Data Quality Improvement.** Standardizing and improving the quality of data used to calculate the embodied carbon associated with construction materials and report this information to the market via EPDs.
- **Phase II: Threshold Setting.** Determining embodied carbon thresholds that product types need to meet to be labeled under this program, based on robust² EPDs and other credible and representative industry benchmarks and data.
- **Phase III: Labeling Materials and Products.** Labeling construction materials and products that meet thresholds set by EPA.

EPA will offer the label for specific construction materials and products based on the Global Warming Potential (GWP)³ value provided on robust EPDs. Labeled materials and products will meet or fall under

¹ “Embodied carbon” is synonymous with “embodied greenhouse gas emissions.” The two terms are used interchangeably in this document. See the “Terminology” section for more information.

² In reference to data, PCRs, EPDs, and associated tools and resources, “robust” refers to the following characteristics: conformance with international, voluntary consensus standards, and/or other standards that are effective and otherwise suitable for the U.S. market; third-party verification; data specific to a facility and supply chain; inclusion of relevant stages of production, use and disposal; inclusion of additional environmental and human health impact categories beyond global warming potential; interoperability via digitization; transparency via disclosure of background datasets, upstream data sources and uncertainty/assumptions; being readily and publicly available (i.e., free of charge) via an open data platform or platforms; and potentially other characteristics as the market develops.

³ The term “GWP” is used in EPDs, PCRs, and Buy Clean policies for construction products as an impact category to report on embodied GHG emissions (per ISO 21930:2017, Section 7.3, Table 5). In the ISO context, “GWP” is conveyed in CO₂e/unit of product/material to denote the product level GHG emission intensities. We note this usage is inconsistent with how GWP is defined by the Intergovernmental Panel on Climate Change (IPCC) and in other GHG accounting efforts,

specified thresholds within a tiered rating system. Thresholds will be informed by a public input process before being finalized and will be periodically reviewed and updated to encourage continuous improvement and to help users meet sustainability objectives. The top threshold tier will be designed to help recognize and reward deep reductions in the embodied carbon associated with construction materials and products.

EPDs provide quantified environmental data related to the life cycle stages of specific products or materials. EPDs are developed using PCRs, which provide a set of specific rules, requirements and guidelines for developing EPDs for one or more products. The label program will use a conformity assessment and verification approach for EPDs aligned with the existing EPD verification system (i.e., EPDs verified by EPD verifiers), and consistent with standards and best practices within the International Organization for Standardization and International Electrotechnical Commission 17000 series and those required by EPA's [Framework for the Assessment of Environmental Performance Standards and Ecolabels for Federal Purchasing](#). EPA will manage an online registry of labeled materials and products, which will be publicly accessible to facilitate the identification and selection of lower embodied carbon construction materials.

Background

Construction materials and products are critical to maintaining and improving the nation's infrastructure, but they are also associated with substantial social, economic and environmental costs. The U.S. industrial sector is linked to nearly a third of annual U.S. greenhouse gas emissions (U.S. EPA, 2024), and the production of construction materials and products accounts for about 15 percent of annual global GHG emissions (Global Alliance for Buildings and Construction, IEA, and UNEP, 2019).

An increasing number of U.S. federal, state and local government procurement policies, as well as other large institutional procurement policies, are aimed at addressing GHG emissions related to construction materials. These policies often require manufacturers to disclose the embodied carbon of the materials and products that they produce, in order to be eligible for procurement. "Embodied carbon" refers to the amount of GHG emissions released during the life cycle of construction materials and products, including extraction, transport and manufacturing of materials and products.⁴

The U.S. federal government is the world's largest buyer of goods and services, with more than \$694 billion spent on procurement in fiscal year 2022 (GAO, 2023). More than 30 percent of construction-related embodied GHG emissions in the United States are estimated to result from government-funded projects (GSA, 2021). With historic investments funded by the Bipartisan Infrastructure Law (2021) and the Inflation Reduction Act (2022), there is more demand than ever for American-made and lower embodied carbon materials.

including national reporting by Parties to the Paris Agreement. Per IPCC, GWP is an index measuring the radiative forcing following an emission of a unit mass of a given substance, accumulated over a chosen time horizon, relative to that of the reference substance, carbon dioxide (CO₂). For more information on the definition and use of the term, "GWP" (Global Warming Potential), please see <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>.

⁴ Per the Inflation Reduction Act, EPA is also considering how to address GHG emissions associated with other relevant stages, including use and disposal stages of a construction material or product's life, where relevant.

The Inflation Reduction Act of 2022

The Inflation Reduction Act, passed by Congress and signed into law in August 2022, leverages federal procurement and funding of buildings and infrastructure to catalyze markets for American-made construction materials and products with lower embodied carbon.

Inflation Reduction Act Section 60116 provided EPA \$100 million dollars “to develop and carry out a program...to identify and label construction materials and products that have substantially lower levels of embodied greenhouse gas emissions associated with all relevant stages of production, use, and disposal, as compared to estimated industry averages of similar materials or products.”

To meet this mandate, the U.S. Environmental Protection Agency is committed to developing a label program that creates an easy, reliable way for purchasers to identify and procure lower embodied carbon construction materials and products. The General Services Administration, the Department of Transportation’s Federal Highway Administration, and other federal agencies can use this label program to set specifications and requirements for federal procurement and federally funded construction projects. It can also be used to make direct purchases of construction materials or products consistent with the requirements of Inflation Reduction Act Sections 60503, 60506 and 70006 and any other relevant low embodied carbon provisions. The label program may provide information that is useful for setting specifications and requirements for construction, or for purchasing the materials and products covered by the program. The program may also be useful in implementing the Buy Clean efforts of other purchasers, including state, tribal and local governments; universities; and other private sector purchasers.

Under Inflation Reduction Act Section 60112, through grants, direct technical assistance and other activities, EPA is supporting manufacturers in quantifying the embodied carbon of materials and products they produce and disclosing this information through environmental product declarations. These efforts can in turn inform a manufacturer’s ability to have its materials and products qualify for the label program. Additionally, these efforts will support other decision-makers involved in designing and building infrastructure projects, including architects, engineers, planners, contractors, suppliers, and construction and demolition firms.

More information about EPA’s programs to support manufacturers in quantifying and disclosing embodied carbon of construction materials and products through EPDs, and about all other program activities, can be found on EPA’s [Low Embodied Carbon Construction Materials Program](#) website. Figure 1 below depicts the relationships and interconnections between the various parts of EPA’s Low Embodied Carbon Construction Materials Program.

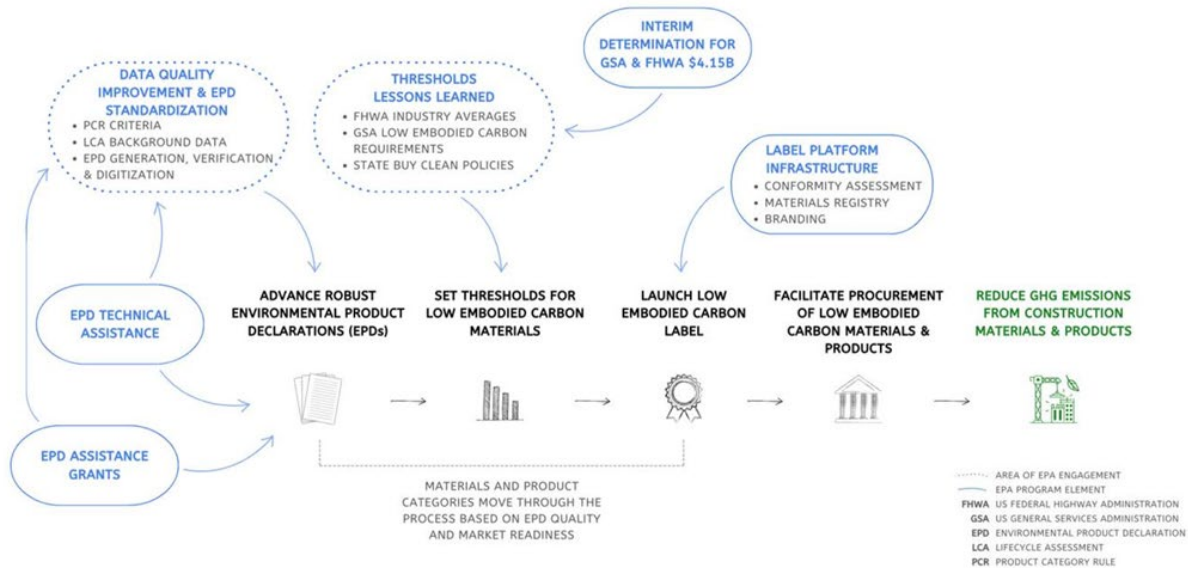


Figure 1. EPA’s Low Embodied Carbon Construction Materials Program.

EPA’s Interim Determination and Related Federal Actions to Date

The Inflation Reduction Act directed GSA and DOT-FHWA to implement programs aimed at reducing embodied carbon in federal construction projects based on EPA’s determination of what constitutes materials/products with substantially lower embodied GHG emissions. In December 2022, EPA issued an [Interim Determination](#). GSA has announced plans to spend \$2.15 billion on substantially lower embodied carbon products to upgrade federal infrastructure, and DOT-FHWA will offer \$2 billion in funding for transportation authorities to do the same. Consistent with the Federal Buy Clean Initiative, EPA’s [Interim Determination](#) focused on four construction materials—concrete, glass, asphalt and steel—due their high embodied GHG emissions and significant government procurement.

In May 2023, GSA issued pilot [requirements](#) that provided thresholds for the materials covered in the [Interim Determination](#) and launched a six-month pilot to test the approach. In November 2023, [GSA announced over 150 federal government building projects](#) for which it would prioritize procuring lower embodied carbon construction materials. In December 2023, GSA issued further information about its [material requirements](#) and [FAQs](#). Currently, [DOT-FHWA’s Sustainable Pavements Program](#) is engaging relevant stakeholders in an industry average initiative to build on GSA’s efforts and to inform the threshold setting process for its [grant program](#). Furthermore, the Department of Energy [is making historic investments](#) in industrial decarbonization to accelerate emissions reductions and position the U.S. industrial sector as a global leader in such innovation.

EPA intends for thresholds set as part of the EPA label program to supplant thresholds set per GSA and DOT-FHWA’s implementation of Inflation Reduction Act Sections 60503 and 60506. EPA is seeking to unify threshold setting methodology under this label program and determinations of “substantially lower embodied carbon” across the U.S. government in order to (1) send consistent demand signals and (2) reduce burden for federal agencies procuring lower embodied carbon materials and businesses manufacturing such materials.

To help achieve net-zero emissions procurement for the federal government by 2050, as directed by Executive Order 14057, and to reduce GHG emissions, the Federal Buy Clean Initiative leverages federal

procurement and funding to catalyze markets for American-made, lower embodied carbon construction materials and products used to upgrade and invest in U.S. infrastructure, including transportation, buildings and energy. EPA serves as a data and technical assistance lead for lower embodied carbon construction materials and products as part of the Federal Buy Clean Initiative, collaborating with 12 other agencies responsible for 90 percent of all federally financed and purchased construction materials and products.

EPA's Low Embodied Carbon Construction Materials Program is part of a much broader set of actions being taken in the federal government to decarbonize the U.S. construction sector. In addition to the material-centric approach taken for the EPA label program, which looks at production stage GHG emissions for newly manufactured products, the federal government is implementing and supporting whole construction project approaches, including renovating and reusing existing building stock, creating whole-project carbon budgets, optimizing material volumes, and encouraging the use of salvaged materials through deconstruction and reuse.

EPA is also engaged in work to improve life cycle assessment, product category rules, and EPD data quality to bridge the gap between current PCR and EPD development practices and the level of credibility necessary for an effective label program, as detailed in the Phase I section of this document. For more information, visit EPA's [Low Embodied Carbon Construction Materials Program](#) website.

EPA's work on these issues includes:

- Developing and beginning implementation of [A Vision and Plan to Improve Secondary Life Cycle Assessment Data Used in Environmental Product Declarations](#), a document outlining a plan to improve public LCA datasets and the Federal LCA Commons via an interagency team.
- Participating in PCR committees updating or developing key PCRs.
- Establishing the [U.S. EPA Criteria for Product Category Rules \(PCRs\) to Support the Label Program for Low Embodied Carbon Construction Materials](#), which set criteria identifying PCRs sufficiently robust for use by the label program
- Awarding grants and providing other technical assistance for PCR updates, data collection and verification efforts, LCA development, and production of new, verified EPDs, among other activities.
- Carrying out other activities that assist in measuring, reporting and catalyzing reduction of embodied carbon in construction materials and products.

State and Local Government Buy Clean Initiatives

Increasingly, states, local governments, and large public and private sector institutions have also adopted their own Buy Clean initiatives and policies to reduce GHG emissions—including embodied carbon—of construction and infrastructure investments. Nine states in the U.S. have passed policies related to embodied carbon including Buy Clean and procurement type policies, building code amendments and specifications, as well as tax incentives. On the local and regional levels, there has been an uptick in policies addressing embodied carbon, including zoning amendments, executive orders, local building code amendments, and policies focused on deconstruction and salvaged materials. EPA's label program approach is informed by and builds from these innovative efforts, consistent with the Inflation Reduction Act, Section 60116(a)(2). Through the [Federal-State Buy Clean](#)

[Partnership](#), 13 states have committed to collaborate with the federal government and one another to send a harmonized demand signal to the marketplace.

Label Program Stakeholder Engagement and Development

In January 2023, EPA issued a [Request for Information](#) to invite stakeholder feedback, which included several questions related to the Inflation Reduction Act Section 60116 label program.

EPA also hosted a stakeholder [webinar](#) on April 19, 2023, providing context for the questions in the RFI related to the label program and inviting additional stakeholder feedback. Input received and lessons learned from more than 200 stakeholders via this RFI have been invaluable to developing the label program.

In February 2024, EPA issued a [Notice of Availability](#) to request public comment on the draft Label Program Approach. Specifically, EPA sought input on the following topics:

- Ways to improve secondary data, enhance publicly accessible datasets in the Federal LCA Commons, and facilitate PCR improvements.
- Effectively defining “representative” data for a specific material/product type when setting thresholds.
- The type of conformity assessment that should be utilized by the program.
- The agency’s overall approach to label program development.

Input from 75 stakeholders who responded to the Notice of Availability has informed this document. In addition, nearly 600 stakeholders attended a [webinar](#) on February 27, 2024, to solicit feedback and pose key questions on the draft Label Program Approach.

In addition to the RFI responses, other stakeholder input, and expertise from EPA’s wider Low Embodied Carbon Construction Materials Program, the implementation approach for the label program described in this document is informed by:

- Consultation with GSA and DOT-FHWA, including on GSA and DOT-FHWA’s pilot programs, consistent with Inflation Reduction Act Section 60116(a).
- State and other Buy Clean programs, consistent with Inflation Reduction Act Section 60116(a)(2).
- Expert guidance from staff of other EPA ecolabel programs (e.g., [ENERGY STAR](#), [WaterSense](#), [Safer Choice](#)).
- The Standards Coordination Office at the Department of Commerce’s National Institute for Standards and Technology and its [guidance on conformity assessment](#).
- [Guidelines for Designing EPA Partnership Programs](#).
- Engagement with LCA, PCR and EPD development efforts.
- Input and guidance from the Interagency Label Program Development Team.⁵

⁵ The Interagency Team for Label Program Development includes representatives from the following agencies: White House Council on Environmental Quality, Department of Defense, Department of Energy, Department of

EPA appreciates the significant and detailed input provided by these experts and stakeholders to inform the label program.

Guiding Questions That Informed the Label Program Approach

EPA used the following guiding questions to inform development of the Label Program Approach:

- How might EPA develop a label program that best implements Inflation Reduction Act Section 60116?
- How might EPA maximize data quality while also expediently meeting the needs of federal purchasers, including GSA under Inflation Reduction Act section 60503 and DOT-FHWA under Inflation Reduction Act Section 60506?
- How might EPA develop a label program that can operate within the current data quality landscape, and that is adaptable as that data landscape changes and improves over time?
- How might EPA build a label program mechanism applicable to all categories of construction materials and products?
- How might EPA develop a label program that is relevant to and usable by agencies that are procuring lower embodied carbon construction materials and products with funding sources other than the Inflation Reduction Act?

Objectives of the Label Program

The label program aims to:

Facilitate federal procurement of substantially lower embodied carbon construction materials and products.

- Provide federal agencies and federal construction contractors with a simple, reliable way to identify and source these materials and products.
- Simplify the process for specifiers and contractors to track compliance with directives to procure and use these materials and products.

Identify early adopters and market movers.

- Ensure manufacturers that invest in disclosing and reducing the embodied carbon of their construction materials and products are identified and aware of federally funded construction projects.

Unify the market.

- Standardize market signals among Buy Clean Programs to avoid market confusion, amplify the label program's impact, and increase its efficiencies.

Transportation's Federal Highway Administration and Federal Aviation Administration, Environmental Protection Agency, Federal Emergency Management Agency, General Services Administration, and Department of Commerce's National Institute of Standards and Technology.

- Improve quality and consistency of data and methodology to quantify embodied carbon emissions.

Complement whole-project sustainability approaches.

- Help specifiers and procurement officials identify materials and products with substantially lower embodied carbon within an already-determined material category and performance need. The label program is not intended to facilitate direct comparison *between* different material categories, or to be used for project-level design decisions.
- **Note:** EPA emphasizes the need for whole-project LCAs⁶ on construction projects as a necessary companion to procuring low embodied carbon construction materials.

Intended Label Use Cases and End Users

The label program is intended to be used in the ways shown in Table 1 below.

Table 1. Intended Use Cases and End Users of the Label Program

Use Case	End Users
Procurement of low embodied carbon construction materials and products	Construction contractors and specifiers for federal agencies making direct purchases of construction materials and products
Development and implementation of Buy Clean programs and policies	Federal entities setting specifications and/or requirements for federal construction projects and others implementing Buy Clean efforts
Delivery of low embodied carbon construction materials and products	Manufacturers of low embodied carbon construction materials and products covered by this label program looking to have their materials and products used in federally funded construction projects
Development of procurement-related grants/funding programs	Federal entities setting criteria for programs that provide funding for materials and products procured as part of transportation infrastructure and/or building construction projects
Low embodied carbon construction	Architects, engineers and other procurement-adjacent professionals and organizations aiming to use low embodied carbon construction materials and products in their federally funded projects, rating systems and construction planning tools

Scope of the Label Program

The categories below constitute the scope of the label program. EPA will consider expanding the program to cover additional life cycle stages, environmental impacts, and materials and products with significant GHG emissions reduction potential in the future as resources allow.

⁶ Commonly referred to as whole-building life cycle assessments in the building design industry.

Life Cycle Stages

The Inflation Reduction Act directed EPA to develop a label program to address embodied carbon at “all relevant stages of production, use, and disposal.” The label program will not initially address GHG emissions beyond the production stage—life cycle modules A1 to A3. As of this document’s publication date, most public and private construction projects in the United States do not use or collect project-specific data on the GHG emissions of life cycle stages beyond module A3. Additionally, GHG emissions beyond A3 are typically estimated based on generic assumptions and scenarios that may not reflect project- or facility-specific conditions; therefore, incorporating these GHG emissions into the label program is a challenge at this time. Whole-project LCAs and other holistic approaches should thus be seen as a necessary companion to the Label Program Approach. EPA will consider adding other life cycle stages and other key environmental impacts as the label program evolves over time, dependent on data quality and resource availability.

Material and Product Categories

The label program will focus initially on steel construction products, asphalt mixtures, concrete mixtures and glass products, consistent with EPA’s 2022 [Interim Determination](#) and the Federal Buy Clean Initiative. EPA chose these material categories based on their typically high embodied carbon levels, the availability of data and reporting frameworks (such as EPDs), and the fact that they represent the vast majority of construction materials and products purchased with federal funds. EPA will consider the inclusion of additional construction materials and products as the label program evolves and dependent on data and resource availability.

Label Program Implementation

EPA’s label program implementation has three phases, which are material agnostic, are applicable to any material or product, and allow materials or products to move through them at their own pace:

- **Phase I: Data Quality Improvement.** Standardizing and improving the quality of data used to calculate the embodied carbon associated with construction materials and report this information to the market via EPDs.
- **Phase II: Threshold Setting.** Determining thresholds that product types need to meet to be labeled under this program, based on robust EPDs and other credible and representative industry benchmarks and data.
- **Phase III: Labeling Materials and Products.** Labeling construction materials and products that meet thresholds set by EPA.

Figure 2 depicts phases of the label program. As each material category/product type completes the requirements of each phase, it will move to the next phase and associated processes.

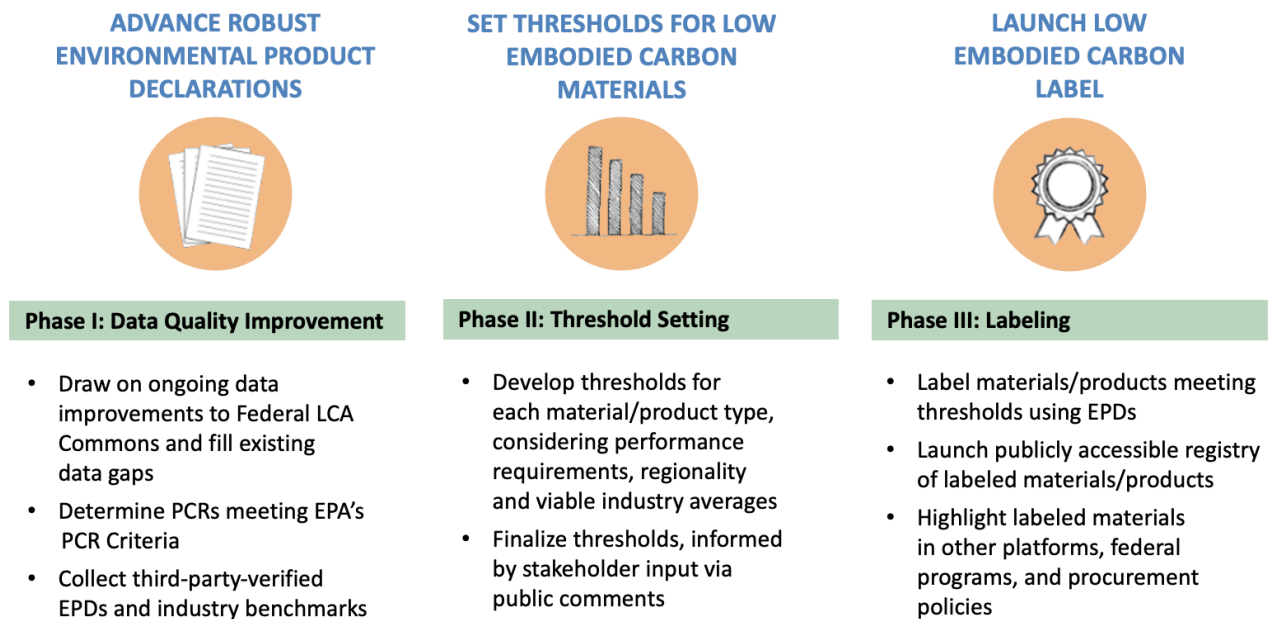


Figure 2. Three Phases of the Label Program.

Phase I: Data Quality Improvement

The success and efficacy of any label program depends on the ability to access and use representative, accurate, verifiable data to set thresholds used to determine which materials and products qualify for the label. As such, this label program will build on EPA’s work related to Inflation Reduction Act Section 60112 to improve the quantity and quality of EPDs in the marketplace. EPDs provide quantified environmental data related to the life cycle stages of specific products or materials. EPDs are developed using PCRs, which provide a set of specific rules, requirements and guidelines for developing EPDs for one or more products.

The objective of Phase I is to improve the quality of PCRs and EPDs and ensure proper LCA practice is being followed to enable effective assessments of label program eligibility. Phase I aligns with stakeholder input that pointed to the need to improve the existing EPDs and PCRs before labeling products. Phase I will help alleviate this data quality concern and facilitate effective threshold setting.

EPA has already begun work to improve the data quality of LCAs, PCRs and EPDs to bridge the gap between the current PCR and EPD development practices and the level of credibility necessary for an effective label program. EPA’s work on these issues includes:

- Establishing [EPA’s PCR Criteria](#) for identifying PCRs sufficiently robust for use by the label program.
- Beginning the implementation of a plan to improve free-to-use and publicly accessible LCA/LCI datasets and the Federal LCA Commons via an interagency team, including publishing the [Life Cycle Inventory Data Gap Assessment](#) to better understand existing data needs.
- Developing technical resources to aid in efforts to implement, identify and use more robust secondary data, including EPA’s [Data Quality Assessment Method to Support the Label Program](#)

[for Low Embodied Carbon Construction Materials](#), updating life cycle impact assessment and non-LCIA indicators, and initiating efforts to update TRACI.

- Participating on PCR committees updating or developing key PCRs and working with a range of other PCR developers to achieve widespread conformance with [EPA's PCR criteria](#).
- Launching grant and technical assistance programs to support PCR updates, data collection and verification efforts, LCA development, and production of new, verified EPDs, among other activities.
- Other activities that assist in measuring, reporting, and catalyzing reduction of embodied carbon in construction materials and products.

Please visit EPA's [Low Embodied Carbon Construction Materials Program](#) website for more information on EPA's activities under Inflation Reduction Act Section 60112, including July 2024 grant selections. Enhancing EPD standardization and the specificity of data in PCRs will help improve the data used to set thresholds under EPA's label program.

Using PCRs

PCRs (product category rules) are specific rules and guidelines for developing standardized, uniform EPDs for specific products, and therefore are the first focus of Phase I. Any material/product type included in the label program will be required to have a published North American PCR under ISO 21930:2017. EPA will assess these PCRs against [EPA's PCR Criteria](#). EPA is currently prioritizing PCRs covering concrete, asphalt, steel and glass. EPA expects to complete the first round of assessments of PCRs covering key construction materials in fall 2024 and will continue to perform assessments in additional material categories, depending on program priorities and resources. Program operators and/or PCR committee members who would like EPA to assess a PCR against [EPA's PCR Criteria](#) should contact embodiedcarbon@epa.gov.

Minimum Requirements to Complete Phase I

Once a material category has a PCR that meets [EPA's PCR Criteria](#), the next step (Phase II) is for EPA to develop thresholds for the product type. PCRs that meet the baseline requirements of [EPA's PCR Criteria](#) will be indicated on EPA's [Low Embodied Carbon Construction Materials Program](#) website.

Phase II: Threshold Setting

In Phase II, EPA will establish thresholds for product types for embodied GHG emissions resulting from the production stage (life cycle modules A1–A3). This process will involve identifying product types within material categories, determining whether product types have sufficient representative data to set thresholds, developing draft thresholds and issuing them for public comment, refining the thresholds based on stakeholder input and any additional data provided, and publishing thresholds. To inform this work, EPA will consider:

- Credible and applicable industry averages and benchmarking efforts for the given individual material category and product type.
- Assessments of published EPDs for the product types. (Note that EPDs used in threshold setting will be built under PCRs that meet [EPA's PCR Criteria](#).)
- Other relevant embodied carbon threshold approaches undertaken by federal, state and local agencies and/or other entities.

- Any additional credible and applicable sources of data.

Initially, no actions will be required on the part of individual manufacturers to initiate Phase II—EPA will review EPDs and the data sources noted above to inform the development of draft thresholds for stakeholder input. In the future, manufacturers and program operators will be able to submit EPDs directly to EPA for consideration in threshold setting.



* Data to be considered will include EPDs built under PCRs meeting EPA's criteria, existing national and regional industry averages and benchmarking efforts, market data and production volumes, and other representative data and LCAs.

Figure 3. Example Phase II Process for a Material Category and Associated Product Types.

Tiered Label System

Under Inflation Reduction Act Section 60116(a), EPA is charged with identifying and labeling materials and products with “substantially lower levels” of embodied carbon when compared with “estimated industry averages of similar materials and products.”

EPA plans to use a tiered threshold format for the label program in response to public input on the draft Label Program Approach, responses to the RFI, and lessons learned from the EPA [Interim Determination](#). EPA is considering developing three tiers of thresholds for each product type, corresponding to different levels of embodied carbon. EPA will use a consistent threshold setting methodology across material categories and product types and expects to set specific thresholds for each tier of the label whenever feasible.

A tiered approach will offer several benefits, including:

- Allowing participation from material manufacturers at different stages in the journey of decarbonizing manufacturing processes.
- Increasing the opportunity to align the label program with the wide range of Buy Clean efforts of federal, state, and local governments as well as other institutional purchasers.
- Potentially catalyzing progressively larger shifts in the market toward lower embodied carbon construction materials and products.

Table 2 presents an example of possible label program eligibility criteria under a tiered label format.

Table 2. Possible Label Program Eligibility Criteria Under a Tiered Format

Tier	Eligibility Criteria
Best	Product GWP must be under a value, as determined in Phase II, that represents the cutting edge of low embodied carbon products available in the market.
Better	Product GWP must be under a value, as determined in Phase II, that is lower than an industry and/or regional average product GWP but is higher than the “best” product GWP value.
Good	Product GWP must be under a value, as determined in Phase II, that is lower than an industry and/or regional average product GWP but is higher than the “better” product GWP value.

See Phase II for more information about how these thresholds will be set. Tier names may change following completion of the label program branding and market strategy.

Decisions on the level of rigor of each tier threshold will be outlined in the draft thresholds issued for public comment and may vary from the approach taken in EPA’s [Interim Determination](#) and from product type to product type. Criteria for the “better” and “good” tiers will be crafted to find a balance between rigor and product availability to meet purchaser needs and ensure usability of the label program. Criteria for the “best” tier will be crafted to assist purchasers in identifying the cutting edge of low carbon materials and practices.

Developing Draft Thresholds

EPA will develop thresholds by considering the following:

- Identifying product types.** Construction materials within the same category will typically have various design or performance requirements outlined in the construction documents. Therefore, where a category has multiple product types due to different design or performance needs, EPA will seek to establish categorized thresholds for similar product types that fall within the same PCR. The number of product types EPA sets thresholds for is subject to the variations inherent to each material category, resources available, and program priorities. The selection of product types covered under the label program will be informed by EPDs, as well as the work of the Interagency Teams for Label Program Development, PCR Coordination,⁷ and Secondary Data for EPDs,⁸ relevant industries, non-governmental organizations, academics, internal EPA

⁷ The Interagency Team for PCR Coordination includes representatives from the following agencies: Department of Agriculture, Department of Defense, Department of Energy, Department of Transportation’s Federal Highway Administration and Federal Aviation Administration, Environmental Protection Agency, Federal Emergency Management Agency, General Services Administration, Department of Commerce’s National Institute of Standards and Technology, and Pacific Northwest National Laboratory.

⁸ The Interagency Team on Secondary Data for EPDs is composed of staff from approximately 15 experienced LCA project leaders and practitioners from EPA, DOT-FHWA, the Department of Agriculture, the Department of Energy, the Department of Commerce’s National Institute of Standards and Technology, and designated external experts. The group works to improve the Federal LCA Commons and its associated datasets. Opportunity for stakeholder engagement on these topics is forthcoming.

knowledge of materials and products, and feedback from the RFI responses and other stakeholder engagement activities.

- **Applying the appropriate methodological approach.** Procurement practices for construction materials and products can vary significantly for different material categories. In some cases, products are custom designed for individual projects to meet owner specifications (e.g., asphalt and ready-mix concrete mixtures for which the mix design is submitted to the owner for approval). In other cases, products are designed to meet national or industry-wide standards (e.g., steel wide flange sections). This can affect the number of products and availability of EPDs within a given category. EPA anticipates establishing methodological approaches that reflect the manner in which construction products are typically specified and procured within a given material category.
- **Identifying representativeness.** To determine what constitutes sufficiently representative data for setting thresholds (for a given material category or for individual product types within a material category), EPA will review the availability of EPDs and other data sources in light of the following factors:
 - Previously used approaches for assessing representativeness, including requirements previously outlined by DOT-FHWA regarding geography
 - Time period coverage
 - Market coverage, including factors such as production volumes
 - Methodological approaches and statistical analysis for benchmarking reports and industry averages
- **Assessing the utility of industry benchmark reports.** Various material industries have started publishing industry-wide benchmark reports. DOT-FHWA is actively working with the four material industries outlined in EPA’s December 2022 [Interim Determination](#) (asphalt, concrete, glass and steel) to develop industry-wide benchmark reports to inform the threshold setting process for their grant program. EPA may determine that these reports are fit for use to inform threshold setting in the label program in addition to using EPDs. Until the updated reports are released, EPA will not presume an outcome.
- **Identifying regionality considerations.** EPA plans to use national and regional industry average benchmarking studies, EPD availability assessments, and material availability assessments to determine how significant regional differences are within each material category, as well as how to best address regional differences within the United States in the threshold setting process. Regionality approaches could leverage existing regional definitions developed by other entities (e.g., existing industry benchmarks, climate zones, groupings of states or geographical regions).

Seeking Stakeholder Input on Draft Thresholds

In Phase II, EPA will seek stakeholder input on the label program’s proposed thresholds for a specific product type (or types) within a material category. The request for public comment will:

- Summarize the threshold setting methodology used, including but not limited to regionality considerations, product type determinations, and data collection and analysis processes.
- Publish the draft thresholds for the product type(s).
- Provide an opportunity for stakeholder response to the draft thresholds.

The request for public comment is intended to clearly show how EPA collected and analyzed the available data to set thresholds. After reviewing stakeholder input, EPA will refine, finalize and publish the thresholds for each product type that is ready for publication.

EPA anticipates that thresholds for each product type will be periodically reviewed and updated every two to four years, dependent on market conditions and available data and resources, to align with ecolabel common practice and to respond to and drive market shifts and help users meet sustainability objectives. All future threshold updates will include releasing draft thresholds for stakeholder input, to allow the industry time to prepare for and provide insight into updated thresholds.

When it sets thresholds for a specific product type covered under the [Interim Determination](#), EPA will indicate how tiered thresholds will apply to GSA and DOT-FHWA's implementation of Inflation Reduction Act Sections 60503 and 60506. For GSA, these changes will only apply to projects solicited for design or design-build starting 90 days after the issuance of EPA label program thresholds. For DOT-FHWA, these changes will be applicable only to grants awarded after the issuance of the EPA label program thresholds.

EPA expects that, once it has published thresholds for various construction materials and products, federal agencies and other institutional purchasers may begin to use them to specify and identify lower embodied carbon construction materials and products in procurement before EPA's completion of Phase III.

Minimum Requirements to Complete Phase II

For a material category to move to Phase III, it must have thresholds published by EPA.

Consideration of Private-Sector Standards and Ecolabels

To leverage other successful multi-attribute ecolabels and/or standards in the marketplace, and to conserve its own resources, EPA will consider engaging in standards development and/or update efforts to promote inclusion of embodied carbon thresholds set by EPA into these standards and ecolabels for materials and products. This approach could help improve harmonization of thresholds (making it easier for manufacturers to respond to customer demand for low embodied carbon construction materials and increasing their return on low embodied carbon investments) and ensure other environmental and/or social hotspots are addressed when relevant to a particular material or product.

Requesting Label Program Thresholds for Product Types Within a New Material Category

EPA anticipates establishing:

- A process for stakeholders to request that the label program establish thresholds for product types within construction material categories beyond concrete, asphalt, steel and glass.
- A process for EPA to evaluate and prioritize such requests.

Phase III: Labeling Materials and Products

The objective of Phase III is to develop a simple, reliable way to identify and specify lower embodied carbon construction materials and products that meet or are below the thresholds set by EPA. To be considered for Phase III, a product type must have a PCR deemed to conform to [EPA's PCR Criteria](#) and yield representative data per Phase I and have thresholds published by EPA per Phase II.

During Phase III, EPA and its partners will do the following:

- Manufacturers will sign a Manufacturer Partner Agreement and submit an EPD for each product they would like to have considered for labeling under this program.
- EPA-approved conformity assessment bodies will conduct evaluations to ensure products meet the label program's thresholds based on information provided in EPDs (see the "Conformity Assessment" section below for details) and other eligibility criteria (e.g., whether the manufacturer has entered into a label program partnership agreement with EPA).
- CABs will deliver to EPA the list of products that have demonstrated conformance with the program's thresholds and other eligibility criteria and are eligible for the label.
- EPA will review the list of products determined to be eligible for the label by the CABs and inform manufacturers that their product has earned the label.
- EPA will maintain a publicly accessible online registry of labeled materials and products.
- EPA will advertise the label program and engage stakeholders to maximize use of the label program and standardize market signals.
- EPA will provide guidance for manufacturers on how to obtain the label for their materials and for federal purchasers on how to use the label program.

Conformity Assessment

EPA will develop a conformity assessment system to determine and maintain product eligibility for labeling under the label program. The conformity assessment system will ensure that eligible products are assessed for conformance to the thresholds and other applicable criteria by independent CABs. The system will communicate the roles and responsibilities of individuals and organizations involved in conformity assessment, including EPA, accreditation bodies, CABs, EPD verifiers, manufacturers and other stakeholders. A document providing details on the system and a checklist of the steps for a product to earn the label will be published on EPA's website.

EPA's conformity assessment system may also include other procedures to maximize consistency of conformity approaches and provide ongoing confirmation of the label's integrity. These procedures can include audits of the various levels of conformance practices and organizations; data reviews; and convening of calibration summits, where accreditation bodies, label program CABs, program operators, EPD service providers, and/or EPD verifiers can share and agree on best practices to address challenges and integrate new processes and ensure consistent conformity assessment procedures are used by all CABs. EPA will develop the conformity assessment approach in collaboration with the Interagency Label Program Development Team and stakeholders and will ensure the approach supports quality assurance processes and needs of key federal agencies.

Once the conformity assessment system is finalized and thresholds resulting from Phase II are published, EPA will approve CABs to offer label program evaluation, at which point manufacturers will be able to work with a CAB to obtain the label for specific products.

The label program will use the existing verification system for EPDs to inform determinations of conformity for products. An EPD provided as part of demonstrating conformity to the eligibility criteria for the label program will be required to have been built under a North American PCR that meets [EPA's PCR Criteria](#). To ensure consistency and credibility of verification approaches used under the label program, EPA has included an appendix titled "EPA's Recommended PCR Reviewer and EPD Verifier

Qualifications” in [EPA’s PCR Criteria](#) and will include requirements for EPD verifiers in the forthcoming conformity assessment system for the label program.

During Phase I, EPA will work to increase the quality of verification provided for EPDs by engaging in PCR update and development processes and supporting capacity building for the EPD verifier community via the grant program and/or direct technical assistance.

Registry of Labeled Materials and Products

EPA will develop and maintain a Registry of Labeled Materials and Products, which will serve as a central database of all products labeled under the label program that will be continuously updated to include newly labeled products. The registry will align with best practices in the marketplace used by other ecolabels and offer links to relevant, independently verified EPDs used as the basis of conformity for each material (i.e., the EPD for each labeled product will be publicly available in the registry). EPA intends to design the registry to be sortable by a range of factors, including material category, product type, label threshold tier, region and EPD verifier. The database will allow users to make comparisons within the same product type. Making comparisons between products in different material categories is not the intended use of the registry and will not be supported. The registry will also provide information on the date of labeling and the date that a label expires to help specifiers ensure and confirm compliance with low embodied carbon procurement requirements at the time of contract award.

To make the registry as accessible as possible, EPA plans to explore options to allow federal and nonfederal entities to integrate the label program’s registry database into their information technology systems, tools and applications, possibly through an application program interface, where appropriate. Prior to launch, the registry will be beta tested with manufacturers, federal specifiers, federal contractors and other key users to ensure optimal user experience and efficacy.

Label Implementation and Market Uptake Strategy

EPA will develop a strategy for marketing, outreach and trademark protection for the label program. This will maximize the use of the label, ensure that the label is properly used in the market, help harmonize market signals, and maximize embodied carbon reductions in the construction material sector.

The marketing and outreach strategy will include:

- Developing and trademarking a label program name and logos/marks to facilitate identification of labeled materials in online registries and procurement tools.
- Developing guidelines for using the label program’s name and logos/marks in the market.
- Creating and implementing a market monitoring plan to ensure appropriate application of the logo use guidelines.
- Developing partnerships and partner agreements with interested purchasers and stakeholder groups to maximize and ensure proper use of the label.
- Engaging state and local government Buy Clean initiatives and other institutional purchasers to use the label program to create a stronger market signal, save resources, and facilitate speedier impact.

EPA will use focus groups and engage key potential label users such as federal contractors, federal contracting officers, and others to test messaging, ensure effective communication of the brand promise, and demonstrate brand value.

Estimated Program Timeline

Start dates for the timelines are based on the date of publication of the final Label Program Approach (for Phase I), or the date at which the given material category/product type completes the previous phase. Timelines are not reflective of all phases for a material, or the label program as a whole, and are subject to change.

Table 3 presents estimated timing of materials and products moving through Phases I, II and III of label program implementation.

Table 3. Estimated Timing of Materials Moving through Phases I, II and III

Label Program Phase	Indication of Successful Completion of Phase	Anticipated Timing
Phase I: Data Quality Improvement	<p>A material category and/or associated product type has a PCR that meets EPA's PCR Criteria.</p> <p style="text-align: center;">and</p> <p>The same material category/product type has a sufficiently robust industry benchmarking report that is publicly available,</p> <p style="text-align: center;">and/or</p> <p>a representative number of robust, publicly available EPDs developed in accordance with the relevant PCR that meets EPA's PCR Criteria.</p>	<p>EPA estimates that most materials and products will each take 6 to 18 months to progress through Phase I of label program implementation.</p> <p>Individual materials and products may need different amounts of time to meet minimum data quality requirements, and they can move through Phase I concurrently.</p> <p>Material categories with PCRs already in the process of being updated or with more experience in this area may take less time. Conversely, materials and products with less robust PCRs and fewer robust EPDs are likely to take longer.</p>

Label Program Phase	Indication of Successful Completion of Phase	Anticipated Timing
Phase II: Threshold Setting	A material category and its respective product types have completed Phase I and Phase II processes and have thresholds published by EPA.	<p>EPA estimates that it will take 6 to 18 months to develop thresholds for any material or product type from the time when EPA initiates the threshold development process.</p> <p>Draft thresholds for product types will move through the established process on a rolling basis, and it is expected that future updates will take less time.</p> <p>The timeline could shift depending on the time needed to address stakeholder input and revise as/if needed.</p> <p>EPA’s initiation of the threshold setting process also depends on the ability of material sectors to meet the outlined minimum data requirements in Phase I.</p>
Phase III: Labeling Materials and Products	A material category and its respective product types have completed Phase I, II and III processes, and are ready to have products move through the labeling process.	EPA anticipates that it will take about 6 to 12 months for a product to undergo review and be available within the label program. Labeling of additional products may take less time if the manufacturer already has completed some steps in the labeling process.

EPA anticipates that initial products could be labeled by the end of fiscal year 2026 (end of September 2026).

References

- City of Portland, Oregon. (2020). City Code 17.106.020. Definitions. <https://www.portland.gov/code/17/106/020>.
- GAO. (2023). A Snapshot of Government-Wide Contracting for FY 2022. <https://www.gao.gov/blog/snapshot-government-wide-contracting-fy-2022>.
- Global Alliance for Buildings and Construction, IEA, and UNEP. (2019). 2019 Global Status Report for Buildings and Construction. <https://www.iea.org/reports/global-status-report-for-buildings-and-construction-2019>.
- GSA. (2021). GSA Green Building Advisory Committee Advice Letter: Policy Recommendations for Procurement of Low Embodied Energy and Carbon Materials by Federal Agencies. <https://www.gsa.gov/system/files/GSA%20GBAC%20Low%20EC%20Procurement%20Policy%20Advice%20Letter-2-17-21.pdf>.
- GSA. (n.d.). Sustainable Facilities Tool: Embodied Carbon. <https://sftool.gov/learn/about/658/embodied-carbon>.
- Inflation Reduction Act of 2022, H.R. 5376, 117th Cong. (2022). <https://www.congress.gov/bill/117th-congress/house-bill/5376/text>.
- International Organization for Standardization. (July 2006). ISO 14025:2006—Environmental Labels and Declarations—Type III Environmental Declarations—Principles and Procedures. <https://www.iso.org/standard/38131.html>.
- International Organization for Standardization. (July 2006). ISO 14044:2006—Environmental Management—Life Cycle Assessment—Requirements and Guidelines. <https://www.iso.org/standard/38498.html>.
- International Organization for Standardization. (July 2017). ISO 21930:2017—Sustainability in Buildings and Civil Engineering Works—Core Rules for Environmental Product Declarations of Construction Products and Services. <https://www.iso.org/standard/61694.html>.
- U.S. EPA. (2023). Sources of Greenhouse Gas Emissions. <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>.
- U.S. EPA. (June 2023). EPA Enterprise Vocabulary. <https://www.epa.gov/research/epa-enterprise-vocabulary>.
- U.S. EPA. (October 2023). EPA’s Greenhouse Gas Emissions & Sinks Glossary. https://sor.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do?details=&glossaryName=Greenhouse%20Emissions%20Glossary.
- U.S. EPA. (2024). Sources of Greenhouse Gas Emissions. <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>.
- U.S. EPA. (n.d.). EPA’s Lifecycle Assessment Principles and Practices Glossary. https://sor.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do?details=&glossaryName=Lifecycle%20Assessment%20Glossary.

Terminology

Note: These definitions have been revised over time but remain in alignment with those used in the [EPA EPD Assistance Grant Program Notice of Funding Opportunity](#). This section includes the most current definitions for EPA’s Low Embodied Carbon Construction Materials Program.

Background data: Data contained within the process(es) supporting the foreground system. Background data constitute the “background system” in a product system.

Buy Clean: A procurement policy—federal, state, local, private or other—that promotes the purchase of construction materials and products with lower embodied carbon, taking into account the life cycle emissions associated with the production stage—extraction, transport, and manufacturing—of those materials and products.

Construction material: The supplies used in building. This definition is consistent with the one in [EPA’s Enterprise Vocabulary](#).

Deconstruction: The systematic dismantling of a structure, typically in the opposite order it was constructed, in order to maximize the salvage of materials for reuse, in preference over salvaging materials for recycling, energy recovery, or sending the materials to the landfill. This definition is consistent with [City of Portland, Oregon, City Code 17.106.020](#).

Embodied carbon: See the definition for “embodied greenhouse gas emissions.”

Embodied greenhouse gas (GHG) emissions: Synonymous with embodied carbon. Refers to collective greenhouse gas emissions associated with upstream—extraction, production, transport and manufacturing—stages of a product’s life. Inflation Reduction Act Section 60112 also directs EPA to consider the use and disposal stages of materials and products, where relevant.

Environmental product declaration (EPD): An environmental claim providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information. An EPD also includes additional product and company information. This definition is consistent with [ISO 14025:2006](#).

Global Warming Potential (GWP): The term “GWP” is used in EPDs, PCRs and Buy Clean policies for construction products as an impact category to report on embodied GHG emissions (per ISO 21930:2017, Section 7.3, Table 5). In the ISO context, “GWP” is conveyed in CO₂e/unit of product/material to denote the product level GHG emission intensities. We note this usage is inconsistent with how GWP is defined by the Intergovernmental Panel on Climate Change (IPCC) and in other GHG accounting efforts, including national reporting by Parties to the Paris Agreement. Per IPCC, GWP is an index measuring the radiative forcing following an emission of a unit mass of a given substance, accumulated over a chosen time horizon, relative to that of the reference substance, carbon dioxide (CO₂). For more information on the definition and use of the term, “GWP” (Global Warming Potential), please see <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>.

Greenhouse gas (GHG): The air pollutants carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorocarbons and sulfur hexafluoride. This definition is consistent with Inflation Reduction Act Section 60112.

Life cycle: All consecutive and interlinked stages in the life of the object under consideration. This definition is consistent with [ISO 21930:2017](#).

Life cycle assessment (LCA): The compilation and evaluation of the inputs, outputs and potential environmental impacts of a product system throughout its life cycle. This definition is consistent with the one found in [ISO 14044:2006](#).

Life cycle impact assessment (LCIA): The phase of LCA aimed at understanding and evaluating the magnitude and significance of the potential environmental impacts for a product system throughout the life cycle. This definition is consistent with the one in [ISO 21930:2017](#).

Material category: A group of construction products, construction elements or integrated technical systems that can fulfill equivalent functions.

North American product category rule (North American PCR): A PCR that covers the geographic region of North America including Canada, Mexico and the United States.

Product category: See definition for “material category.”

Product category rules (PCRs): A set of specific rules, requirements and guidelines for developing EPDs for one or more product categories. This definition is consistent with [ISO 14025:2006](#).

Product type: A specific breakdown within a material category that adds specificity to what subgroup of a material category is being referred to in a given context.

Reuse: The utilization of a product or material that was previously installed for the same or similar function without significantly altering the physical form. Reuse does not include surplus from overstock or overordering.

Salvage: The deliberate reclamation of reusable materials from the disassembly, deconstruction, or demolition of buildings or structures.

Secondary data: Data indirectly determined through measurement, estimation or calculation and not based on specific original source measurements. This can include data that is originally developed using primary data sources but is further aggregated to represent average processes or products. This definition is derived from [ISO 21930:2017](#).

Similar product types: Materials/products within the same product category (e.g., concrete, glass, asphalt mixture, steel) that meet the same requirements (function and/or performance).

List of Abbreviations

CAB	conformity assessment body
CO ₂ e	carbon dioxide equivalent
DOT-FHWA	Department of Transportation–Federal Highway Administration
EPA	Environmental Protection Agency
EPD	environmental product declaration
GAO	Government Accountability Office
GHG	greenhouse gas
GSA	General Services Administration
GWP	Global Warming Potential
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
LCA	life cycle assessment
LCIA	life cycle impact assessment
PCR	product category rule
psi	pounds per square inch
RFI	Request for Information
TRACI	Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts
UNEP	United Nations Environment Programme
U.S.	United States of America