



thinkstep

Environmental Product Declarations

The Business Value

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1. Definitions: PCR, LCA, EPD
2. The Business Value of EPDs: Market Drivers
3. LEEDv4 MR EPD Credit: Industry-wide and Product-specific EPD
4. Summary

The Guidelines

Product Category Rules (PCR)

“Set of specific rules, requirements, and guidelines for developing Type III environmental product declarations for one or more product categories” (ISO 14025)

The Analysis

Life Cycle Assessment (LCA)

“Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle” (ISO 14040)

The Communication

Environmental Product Declaration (EPD)

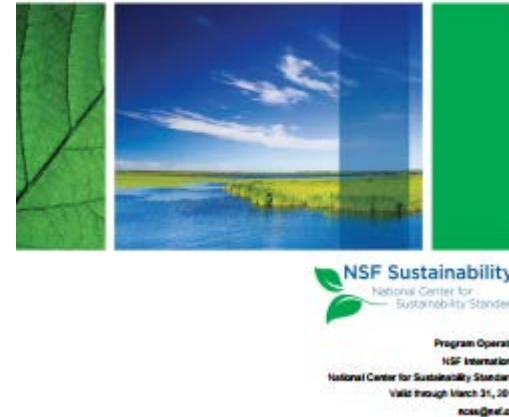
“Providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information” (ISO 14025)

PCR Defined Per ISO 14025

- PCR provides a method for developing an EPD
- The PCR establishes the system boundary (cradle to gate or cradle to grave)
- You must have a PCR before you do an EPD
- PCRs are typically valid for 5 years
- PCRs for flat glass and processed glass are published

Product Category Rule for Environmental Product Declarations

QANA PCR for Flat Glass: UN CPC 3711



PCR Guidance for Building-Related Products and Services

From the range of Environmental Product Declarations of
UL Environment

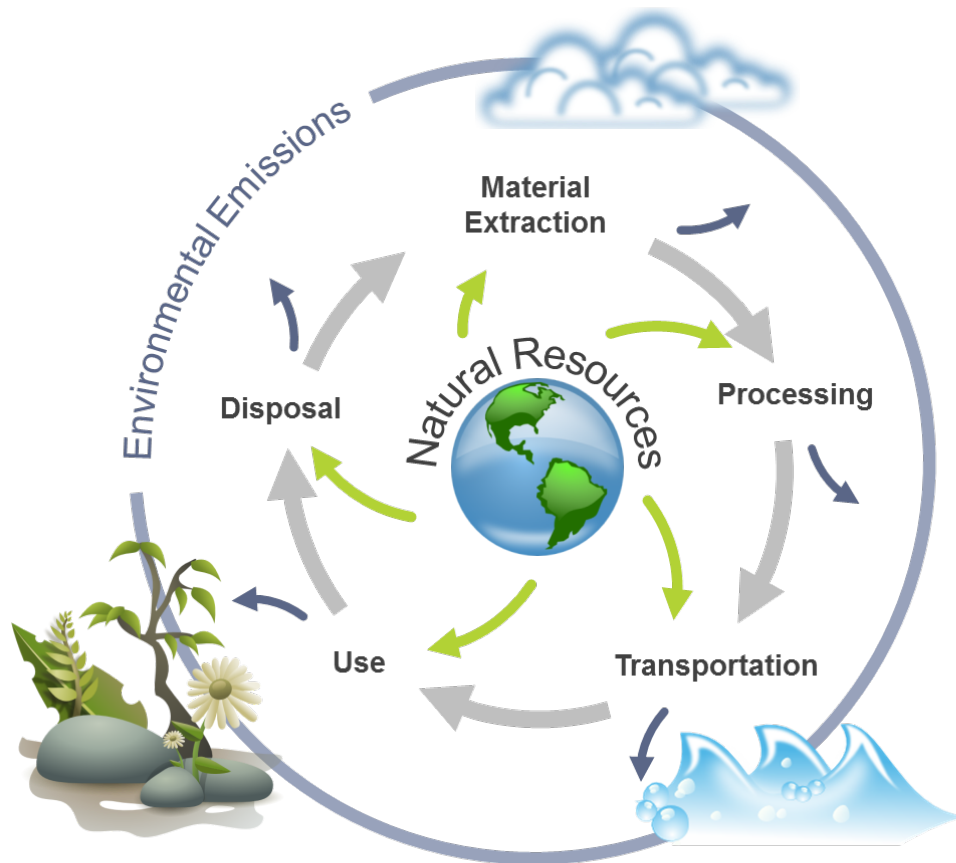
Part B: Processed Glass EPD Requirements



PCR	System Boundary	Declared Unit	Glass Products Included	Validity
NSF Flat Glass	Cradle-to-gate	1 t	<ul style="list-style-type: none"> UN CPC 3711 Flat, Float, Rolled Subclassess: UN CPC 37112, 37113, 37114, Tinted 	Thru 2019
ULE Processed Glass	Cradle-to-gate	1m ²	Processed/coated glass: <ul style="list-style-type: none"> Heat-treated Insulating Laminated glass Building envelope and installed interior 	Thru 2020

Life Cycle Assessment

Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle (ISO 14040)



Scope of the business-to-business windows
PCR is Cradle-to-Gate
with option for declaring
potential impacts after
demolition

Life Cycle Assessment

System Boundary: Flat Glass

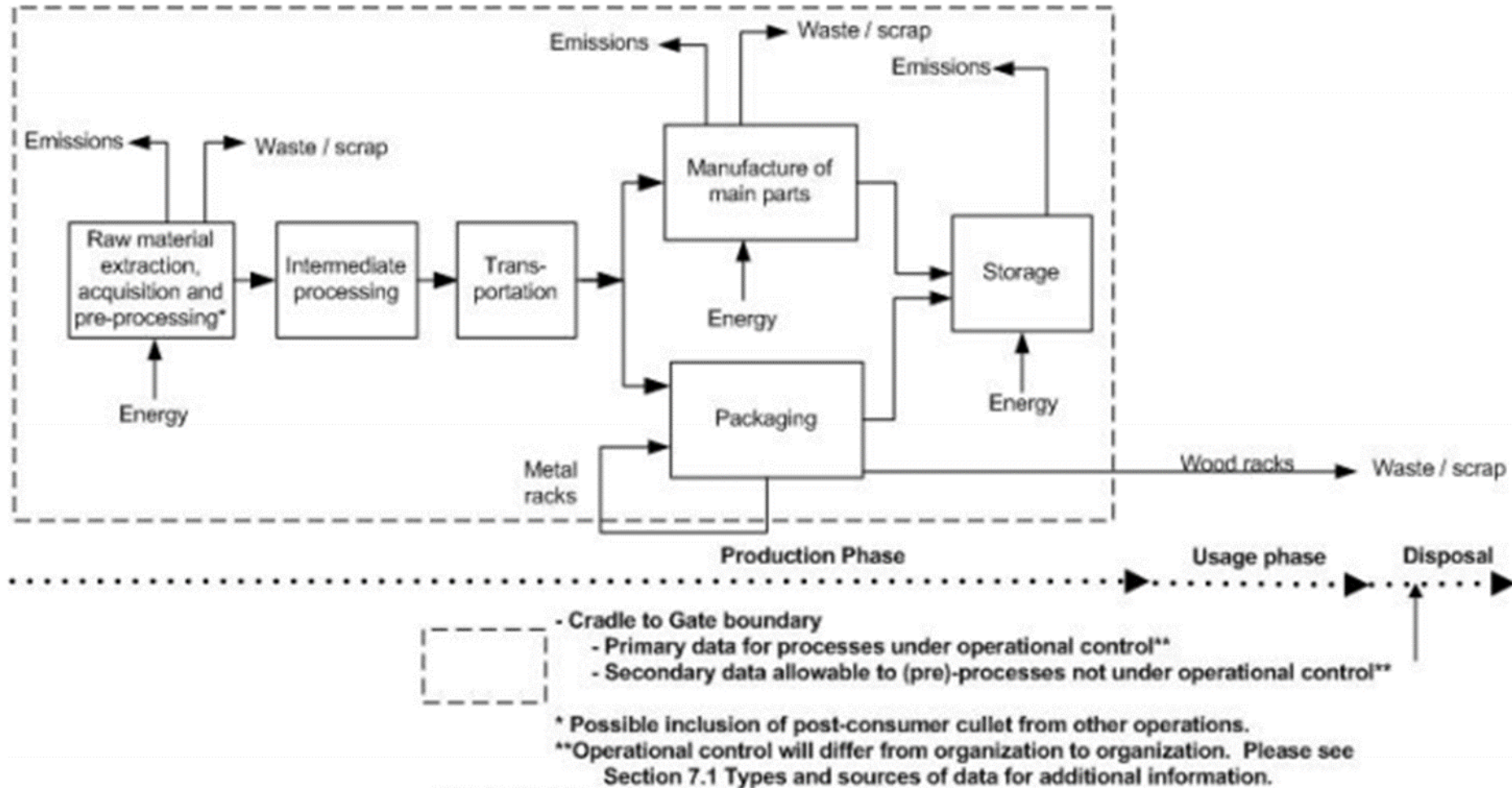


Figure 1: System Boundaries, example flow

EPD Defined

Providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information (ISO 14025)



ENVIRONMENTAL PRODUCT DECLARATION

Vitro Architectural Glass Flat Glass Products

This EPD was not written to support comparative assertions. Even for similar products, differences in declared unit, use and end-of-life stage assumptions and data quality may produce incomparable results. It is not recommended to compare EPDs with another organization, as there may be differences in methodology, assumptions, allocation methods, data quality such as variability in data sets and results of variability in assessment software tools used.



Issue Date: July 25, 2017

Valid Until: July 25, 2022

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United States

Declaration Number:
ASTM-EPD #061

Program Operator: ASTM International
Company: Vitro Architectural Glass



www.astm.org



www.VitroGlazings.com

PCR Reference: NSF GANA Product Category Rule (PCR) for Flat Glass - UNOPC 3711
PCR review was conducted by: Jack Gelbig (Chair), Ecoform, ncsa@net.org
Declared Unit: 1 metric tonne of flat glass maintained for a 30-year reference service life (RSL)



ENVIRONMENTAL PRODUCT DECLARATION

Vitro Architectural Glass Processed Glass Products

This EPD was not written to support comparative assertions. Even for similar products, differences in declared unit, use and end-of-life stage assumptions and data quality may produce incomparable results. It is not recommended to compare EPDs with another organization, as there may be differences in methodology, assumptions, allocation methods, data quality such as variability in data sets and results of variability in assessment software tools used.



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Declaration Number:
ASTM-EPD #062

Program Operator: ASTM International
Company: Vitro Architectural Glass



www.astm.org



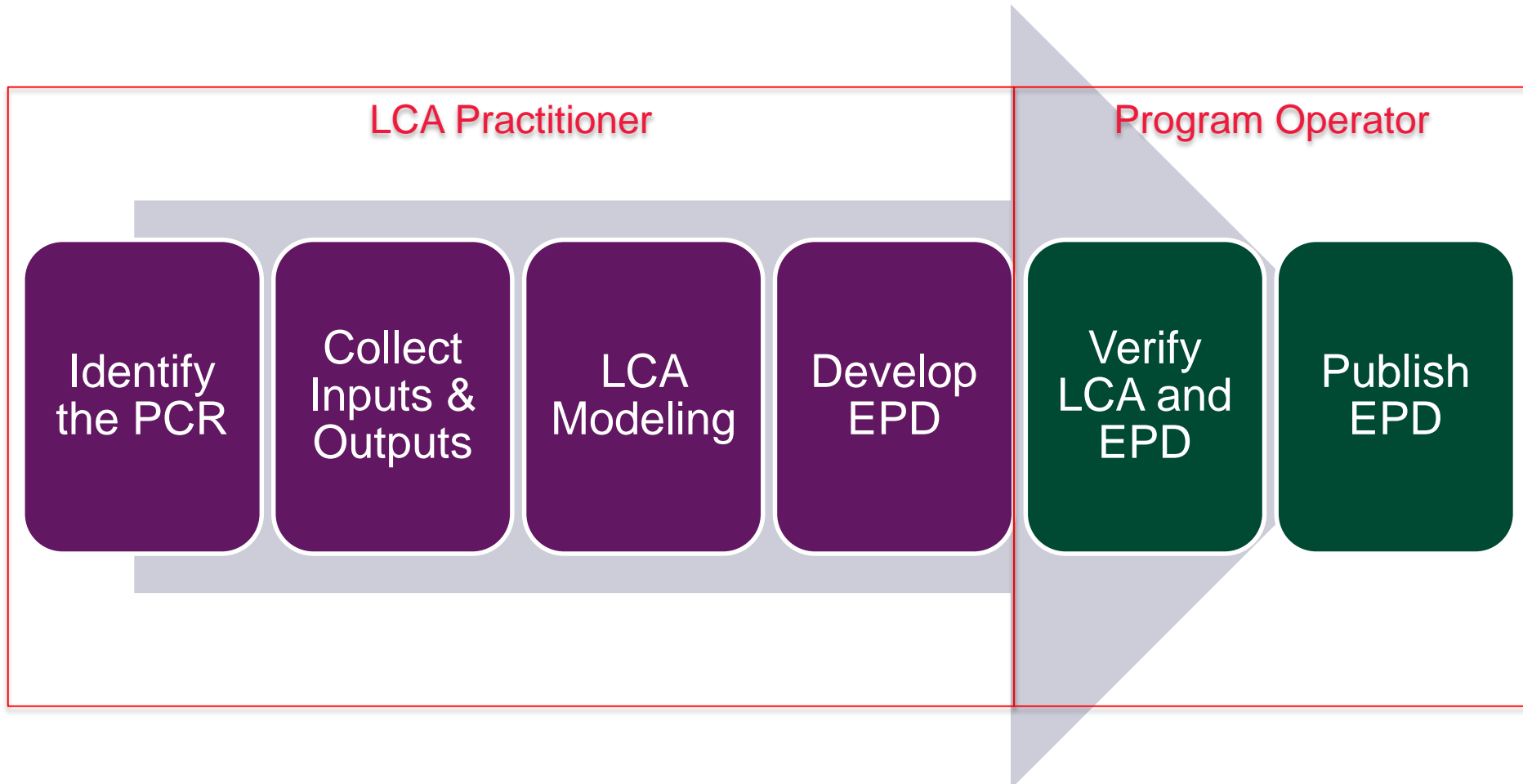
www.VitroGlazings.com

PCR Reference: UL Environment PCR Guidance for Building-Related Products and Services Part 6: Processed Glass EPD Requirements
PCR review was conducted by: Jack Gelbig (Chair), Ecoform, ncsa@net.org
Declared Unit: 1 m² of processed glass

What Does an EPD Tell You?

Life Cycle Assessment Results (TRACI 2.1) Vitro Architectural Flat Glass

EVALUATION VARIABLE	UNIT PER METRIC TONNE	TOTAL	RAW MATERIALS	PRODUCTION
Primary Energy, non-renewable	MJ	19,600	4,870	14,800
Primary Energy, renewable	MJ	695	227	468
Global Warming Potential	kg CO ₂ eq.	722	350	372
Ozone Depletion Potential	kg CFC-11 eq.	1.10E-07	2.96E-08	8.06E-08
Acidification Potential	kg SO ₂ eq.	8.02	0.909	7.11
Eutrophication Potential	kg N eq.	0.461	0.0501	0.411
Smog Formation Potential	kg O ₃ eq.	212	16.6	195
Mineral Resource Depletion Potential (ReCiPe 1.08)	kg Fe eq.	12.3	6.23	6.09



Be **VERY** careful if you are going to compare EPDs.

You can compare them, **But...**

The only way you can compare EPDs is if:

- The PCR is the same
- The product function is identical
- The software used to do the LCA is the same
- The underlying data used to do the LCA is the same

USGBC will soon be making this point more clear in LEEDv4



The Business Value of EPDs

Product Transparency ... Where is it coming from?



SMITHGROUPJJR

boora architects

CHUCK & CHUCK Architects

The HPD is designed to function as a complement to the **Environmental Product Declaration (EPD)** protocol that facilitates the consistent development and reporting of flows of energy, carbon, water and other pollutants from product Life Cycle Assessments (LCA) and characterizes related environmental impacts. Other product labels and certification programs are also referencing the HPD to harmonize the requirements of their tools with this open standard.

To further support our mission to mitigate the environmental and health impact of our buildings, we will progressively promote products to our clients that health experts have identified as less harmful or harmless to their occupants, builders, community and environment. Because of that, we favor products and manufacturers that promote transparency. The regular use of HPDs and EPDs in our practice will allow us to help our clients make informed decisions. We thank you for your efforts and look forward to working with you to incorporate this initiative into our practice.

Sincerely,



SFO



- g. For all proposed building products and furnishing, provide the following:
 - 1) Environmental Product Declarations (EPDs) based on life cycle assessment (LCA) derived using GaBi content in PDF format.
 - 2) Health Product Declaration (HPDs)
 - 3) Life Cycle Cost Assessment (LCCA)
 - 4) Supply Chain Engagement report that aligns with LEED v4
- h. For all proposed interior building products and furnishings, provide the following:
 - 1) Certification of compliance with the California Department of Public Health (CDPH) Standard Method v1.1 2010 for Volatile Compound Emissions (VOC) and acceptable concentrations;

What is AB 262?

- Requires contractors bidding on state infrastructure and construction project to disclose the global warming potential (GWP) for eligible materials (e.g. flat glass).
- By January 1, 2019: The Department of General Services (DGS) required to set a maximum allowable GWP based on an industry-average for the material.
- By January 1, 2022: The DGS required to review the maximum acceptable GWP and adjust it downward.

The Role of EPDs in AB 262:

- July 1, 2019: A successful bidder required to submit a current EPD.
- AB 262 requires that the facility-specific GWP does not exceed the maximum global warming potential for that material.
- AB 262 prohibits a successful bidder from installing any eligible materials on an eligible project until that bidder submits an EPD.

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB262

A low-angle, upward-looking photograph of a construction site. In the foreground, the backs of several construction workers wearing white hard hats and bright yellow-green safety vests are visible. They are looking up at a tall building under construction. A large crane is positioned on the left, with a heavy load suspended in the air. The building's facade is partially covered in blue safety netting. The sky is clear and blue.

LEEDv4 MR EPD Credit Overview

Materials and Resources

Building product disclosure and optimization – Environmental Product Declarations (EPDs)

Up to 2 Points

- Encourage the use of products and materials for which verified life-cycle information is available



- Encourage the selection of environmentally-preferable products

Option 1. Environmental Product Declaration (1 point)

Use at least 20 different permanently installed products sourced from at least five different manufacturers that have:

- Product-specific LCA
(counts as $\frac{1}{4}$ product)

Publicly available LCA report. Requires critical review by a third party to ensure conformance with ISO 14044.

- Industry-average EPD
(counts as $\frac{1}{2}$ product)
- Product-specific EPD
(counts as 1 product)

EPD Credit Language (Continued): Option 1

Option 1. Environmental Product Declaration (1 point)

Use at least 20 different permanently installed products sourced from at least five different manufacturers that have:

- Product-specific LCA
(counts as ¼ product)
- Industry-average EPD
(counts as ½ product)
- Product-specific EPD
(counts as 1 product)

Type III EPD that is generic to a product (rather than specific to a particular manufacturer or company). For the product to be eligible, the manufacturer must claim representation either directly on the EPD or through a Program Operator. Verified through a Program Operator against ISO 14025.

Option 1. Environmental Product Declaration (1 point)

Use at least 20 different permanently installed products sourced from at least five different manufacturers that have:

- Product-specific LCA
(counts as $\frac{1}{4}$ product)
- Industry-average EPD
(counts as $\frac{1}{2}$ product)
- Product-specific EPD
(counts as 1 product)

Type III EPD that is specific to a particular manufacturer and does not necessarily reflect the practices of the rest of the industry. Verified through the Program Operator against ISO 14025.

AND/OR, for 1 Point

Option 2. Multi-attribute optimization

Use products that comply with one of the criteria below for 50%, by cost, of the total value of permanently installed products in the project.

- Third party certified products that demonstrate impact reduction below industry average.
- A company must be identified in the Industry Association EPD to achieve recognition. A certified EPD that shows superior performance to the industry average will demonstrate that improvement
- USGBC approved program -- Products that comply with other USGBC approved multi-attribute frameworks.

- An EPD is a tool to help you take advantage of opportunities in the green building industry.
 - PCRs are done
 - The first EPDs have been published
 - LCA tools abound
- Commercial projects are requiring environmental transparency at the product-level
 - SFO
 - Google, Salesforce
 - Buy Clean California (AB 262)
- All new LEED projects are now following LEEDv4
- An EPD can be done by an individual manufacturer (aka “product-specific EPD”) or as an entire industry (aka “industry-wide EPD”)
 - Maximum LEED credit contribution is via product-specific EPD route
 - Industry-wide EPDs also make a LEED credit contribution

Thank you!
Questions?



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