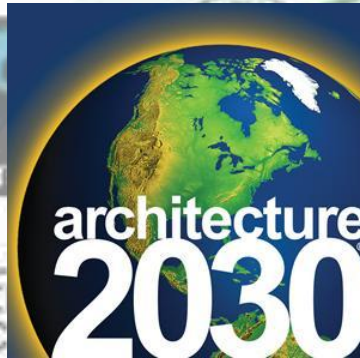

Radical Material and Resources Reporting Criteria in LEEDv4

Lionel Lemay, PE, SE, LEED AP
NRMCA Sr. VP of Sustainability



Proliferation of Green Standards



envisiontm





GREEN BUILDING

**LEADERSHIP IN ENERGY
AND ENVIRONMENTAL
DESIGN (LEED V4)**

LEED Credit Category	LEED v4 Points	LEED 2009 Points	Concrete Contributes
IP – Integrative Process	1	0	✓
LT - Location & Transport	16	0	✓
SS - Sustainable Sites	10	26	✓
WE - Water Efficiency	11	10	✓
EA - Energy & Atmosphere	33	35	✓
MR - Materials & Resources	13	14	✓
EQ - Indoor Environ Quality	16	15	✓
ID - Innovation	6	6	✓
RP - Regional Priority	4	4	✓
TOTAL	110	110	74

Walkable Streets





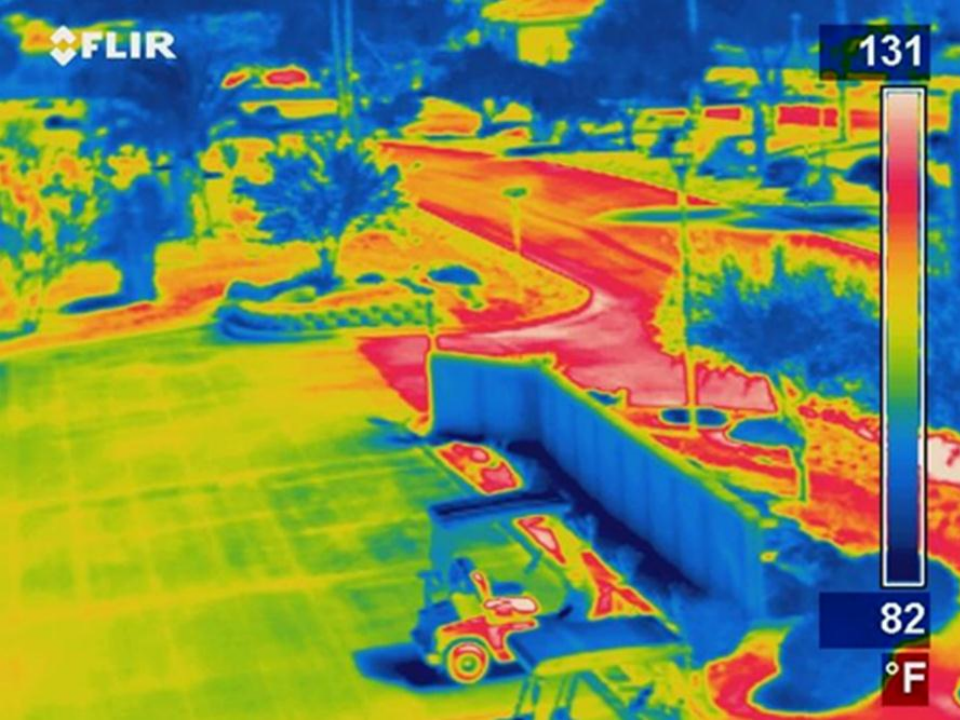
Surrounding Density and Diverse Uses

Access to Quality
Transit



Rainwater Management





Heat Island Reduction

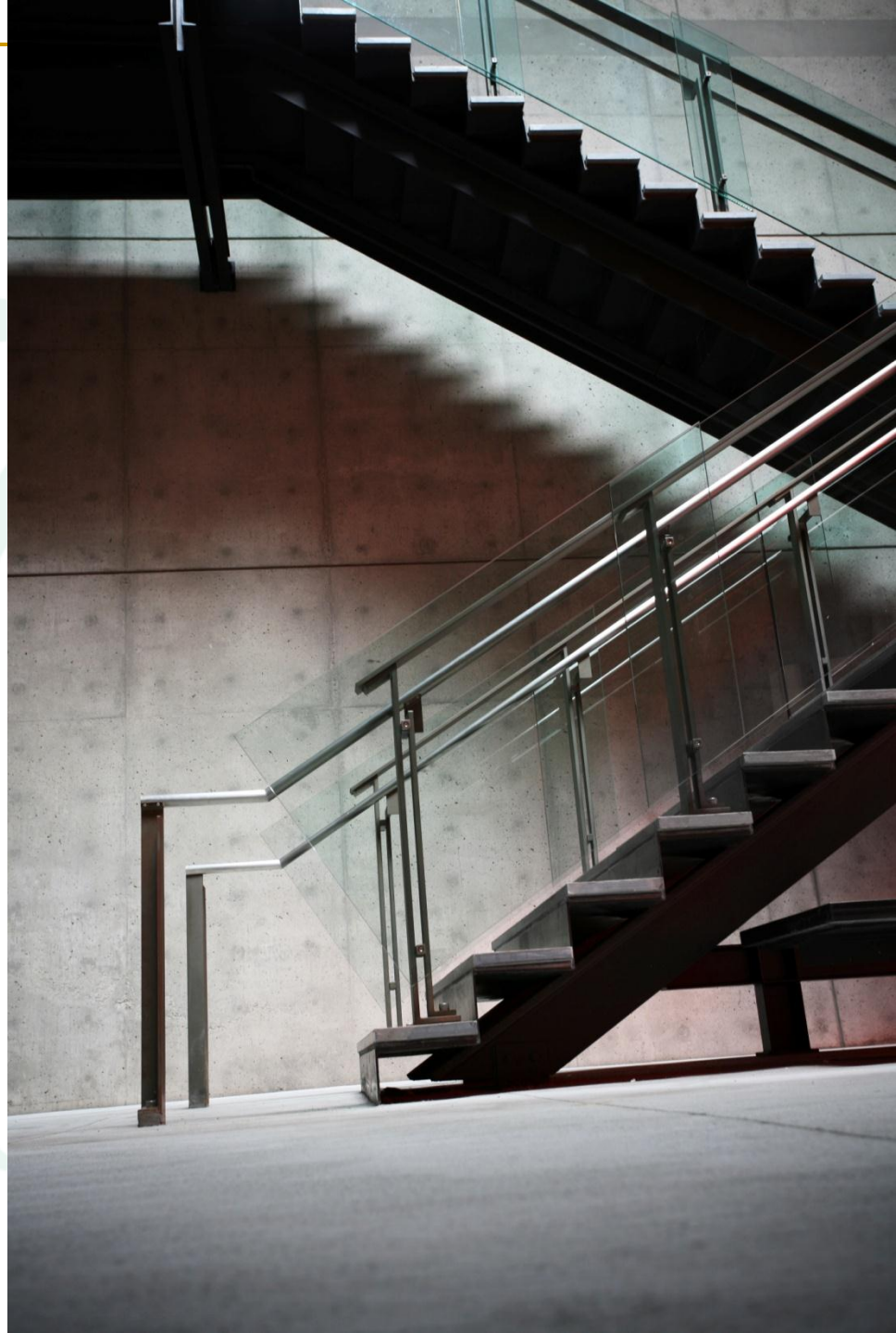
Water use Reduction



Optimized Energy Performance



Low Emitting
Interiors



Daylight



Acoustic Performance



MR: Materials and Resources



- Recycled content for structural materials eliminated
- Regional Material eliminated
- Certified Wood eliminated

LEED v4
Materials
&
Resources
Credits

LEED v4



LEED v4



Transparency
is The New
Green.

LEED v4



MATERIALS & RESOURCES

POSSIBLE 13

MRp1	Storage and collection of recyclables	REQ
MRp2	Construction and demolition waste management planning	REQ
MRC1	Building life-cycle impact reduction	5
MRc2	Building product disclosure and optimization – environmental product declarations	2
MRc3	Building product disclosure and optimization – sourcing of raw materials	2
MRc4	Building product disclosure and optimization – material ingredients	2
MRc5	Construction and demolition waste management	2

LEED v4 MR Credits

Global warming potential
Depletion of stratospheric ozone layer
Acidification of land and water sources
Eutrophication
Formation of tropospheric ozone
Depletion of nonrenewable energy

Land use
Water use
Biodiversity
Human rights
Noise

Human health (cancer)
Human health (non-cancer)

EPD

CSR

HPD

MRC2: ENVIRONMENTAL PRODUCT DECLARATIONS



Environmental Product Declarations

Option 1 – EPDs (1 point)

20 Permanently Installed Products

- **Product specific declaration** – publicly available (1/4 product)
- **Industry average EPD** – Third party certified Type III (1/2 product)
- **Product specific EPD** – Third party certified Type III (Full product)
- USGBC Approved Program

Nutrition Facts	
Serving Size 1 cup (228g)	
Servings Per Container 2	
Amount Per Serving	
Calories 250	Calories from Fat 110
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Potassium 700mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%
* Percent Daily Values are based on a diet of other people's misdeeds. Your Daily Values may be higher or lower depending on your calorie needs.	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g

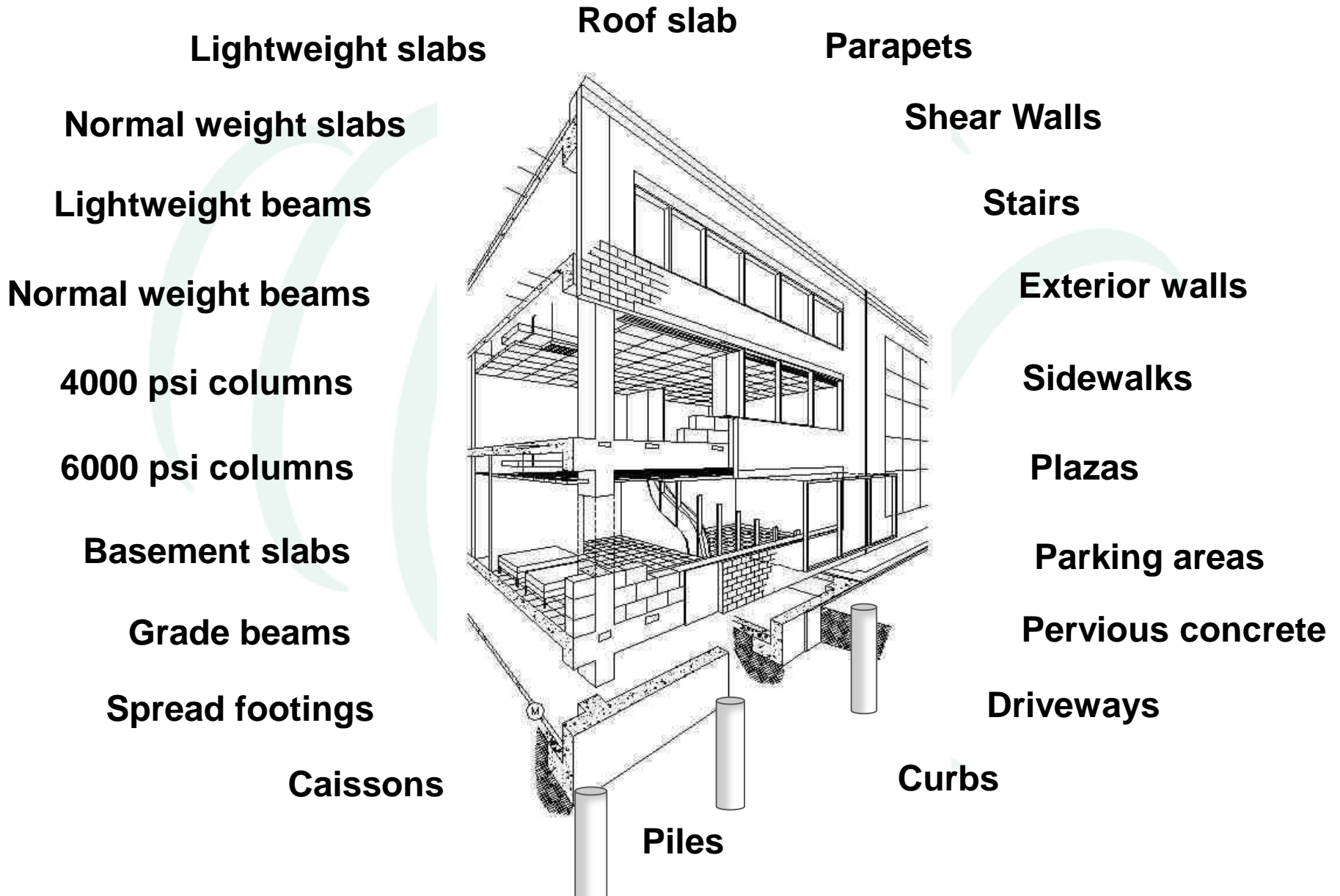
product

(noun)

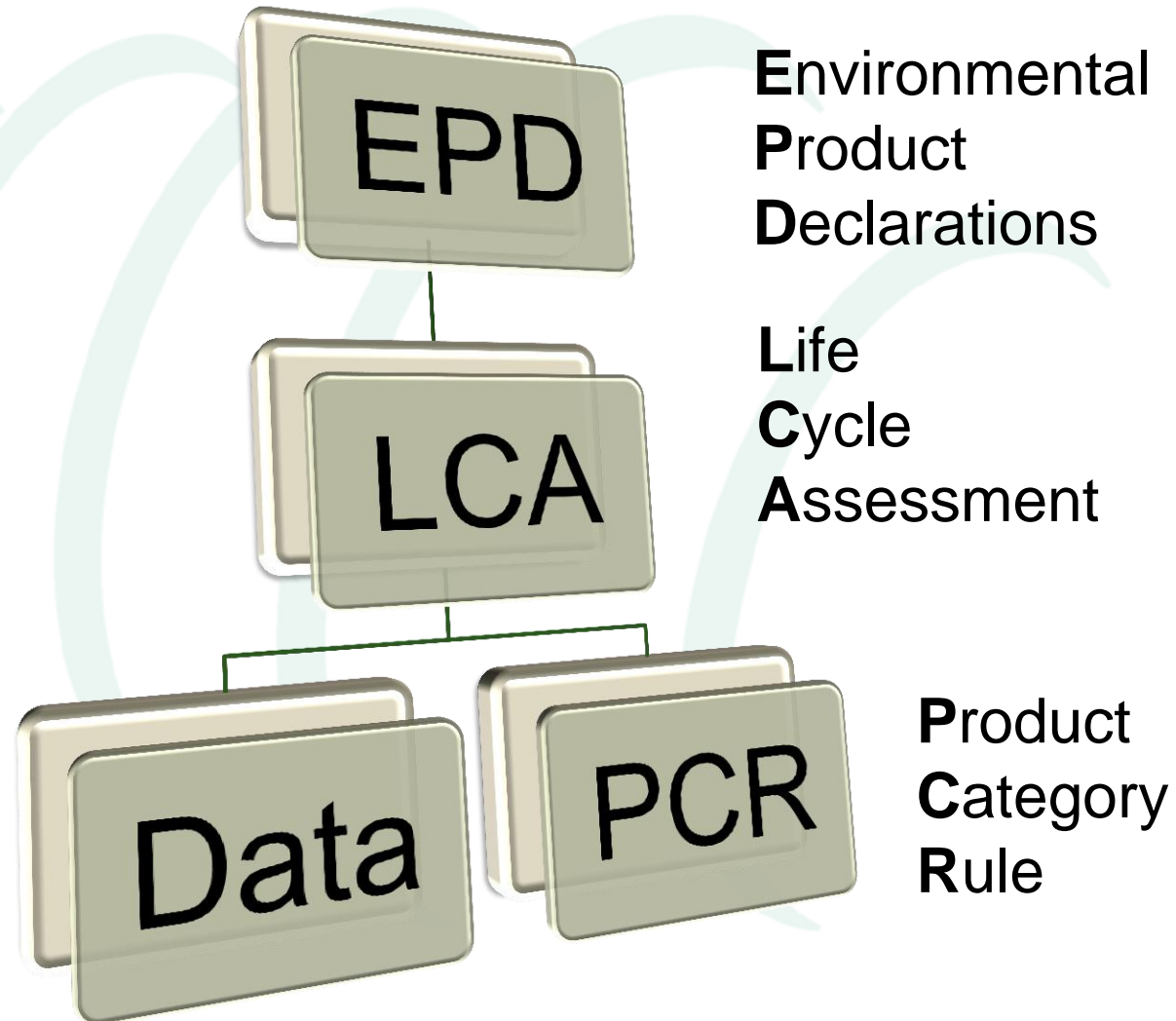
a: The unit that arrives at the project site - either as a finished element or a component of a site-assembled product.

b: Defined by the distinct function that it serves.

Advantage: Concrete



What are EPDs?



Environmental Product Declaration

- Provide quality assured and comparable information regarding environmental performance of a product and/or service

Type	Standard	3 rd party reviewed	Endorsement	Shorthand
I	ISO 14024	Yes	Yes	Eco-label
II	ISO 14021	No	Yes	Self-declaration
III	ISO 14025	Yes	No	Nutrition label

Type III EPD

Nutrition Facts

Serving Size 1/2 cup dry (40 g)
Serving Per container: 13

Amount Per Serving

Calories 150 Calories from Fat 25

% Daily Value*

Total Fat 3 g	4%
Saturated Fat 0.5 g	2%
Trans Fat 0 g	0%
Cholesterol 0 mg	0%
Sodium 0 mg	0%
Total Carbohydrate 27 g	9%
Dietary Fiber 4 g	15%
Sugars 1 g	
Protein 5 g	

Vitamin A	0%
Vitamin C	0%
Calcium	0%
Iron	10%

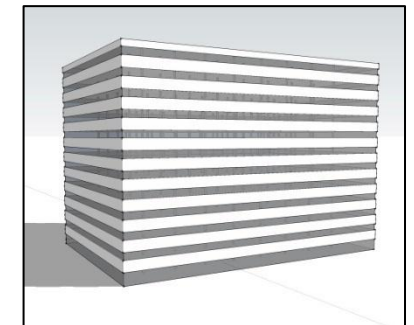
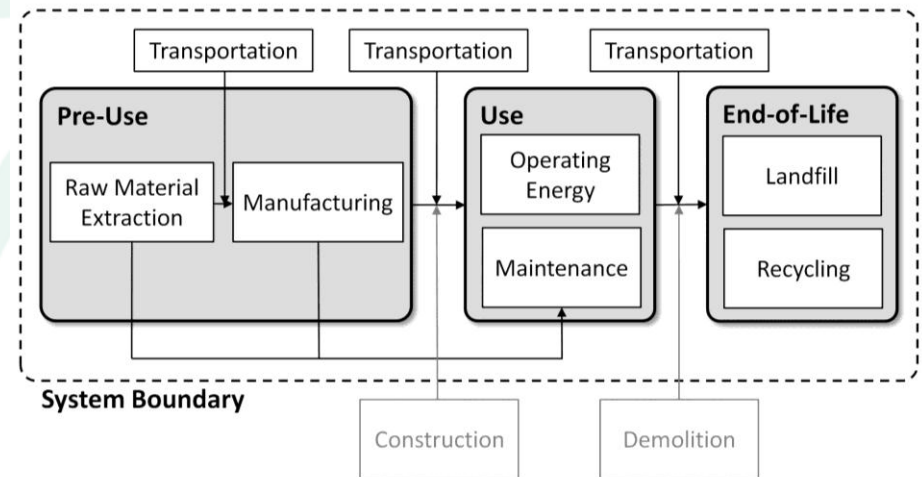
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65 g	80 g
Sat Fat	Less than	20 g	25 g
Cholesterol	Less than	300 mg	300 mg
Sodium	Less than	2,400 mg	2,400 mg
Total Carbohydrate		300 g	375 g
Dietary Fiber		25 g	30 g

Impact Category	Impacts (SI Units)	Impacts (US Units)	Reference
Total Primary Energy	2957 MJ/m3	2.13 MBTU/yd3	N/A
Non-renewable	2665 MJ/m3	1.92 MBTU/yd3	N/A
Renewable	281 MJ/m3	0.21 MBTU/yd3	N/A
Batch Water	127 kg/m3	210 lbs/yd3	N/A
Wash Water	18 kg/m3	30 lbs/yd3	N/A
Total Waste Disposed	24 kg/m3	40 lbs/yd3	N/A
Global Warming Potential	334 kg CO2eq/m3	254 kg CO2 eq/yd3	TRACI
Ozone Depletion	0.00 kg CFC11 eq/m3	0.00 kg CFC11 eq/yd3	TRACI
Acidification Potential	0.78 kg SO2 eq/m3	0.59 kg SO2 eq/yd3	TRACI
Eutrophication Potential Air	0.00 kg N eq/yd3	0.00 kg N eq/yd3	TRACI
Eutrophication Potential Water	0.09 kg N eq/m3	0.07 kg N eq/yd3	TRACI
Photochemical Ozone Createion/Smog	0.06 kg C2H6 eq/m3	0.05 kg C2H6 eq/yd3	TRACI
Human Health Criteria (particulate matter)	0.49 kg PM10/m3	0.38 kg PM10/yd3	TRACI
Human Health CF Non-cancer	2.67E-5 CTUoncancer/m3	2.03E-5 CTUoncancer/yd3	TRACI
Human Health CF cancer	7.29E-6CTUcancer/m3	5.54E-6 CTUcancer/yd3	TRACI

Product Category Rules (PCR)

- Instructions on how and what to report via the EPD
 - Product studied
 - Functional unit
 - System boundaries
 - Life cycle stages included
 - Impacts reported



Mix Code	Plant	Perf.	Impacts								
			CS	TPE	CWB	CWW	GWP	ODP	AP	EP	POCP
		<i>minimum</i>	2,000	2.155E+03	6.871E-02	4.504E-03	2.058E+02	3.634E-06	1.513E+00	8.143E-02	2.568E+01
		<i>maximum</i>	6,000	3.629E+03	7.287E-02	4.504E-03	4.819E+02	6.637E-06	3.466E+00	1.395E-01	4.745E+01
325PC901	Brentwood	2,500	2.556E+03	6.871E-02	4.504E-03	3.058E+02	4.237E-06	2.174E+00	9.251E-02	3.072E+01	
325PC902	Brentwood	2,500	2.552E+03	7.287E-02	4.504E-03	3.056E+02	4.249E-06	2.173E+00	9.197E-02	3.067E+01	
325PC9D1	Brentwood	2,500	2.231E+03	6.871E-02	4.504E-03	2.529E+02	3.634E-06	1.786E+00	8.243E-02	2.572E+01	
325PC9D2	Brentwood	2,500	2.225E+03	7.287E-02	4.504E-03	2.525E+02	3.638E-06	1.784E+00	8.143E-02	2.568E+01	
325PC9Q1	Brentwood	2,500	2.161E+03	6.871E-02	4.504E-03	2.062E+02	4.591E-06	1.515E+00	1.004E-01	2.760E+01	
325PC9Q2	Brentwood	2,500	2.155E+03	7.287E-02	4.504E-03	2.058E+02	4.571E-06	1.513E+00	9.997E-02	2.754E+01	

Mix Code	Plant	Perf.	Impacts								
			CS	TPE	CWB	CWW	GWP	ODP	AP	EP	POCP
		<i>minimum</i>	2,000	2.155E+03	6.871E-02	4.504E-03	2.058E+02	3.634E-06	1.513E+00	8.143E-02	2.568E+01
		<i>maximum</i>	6,000	3.629E+03	7.287E-02	4.504E-03	4.819E+02	6.637E-06	3.466E+00	1.395E-01	4.745E+01
325PC901	Brentwood	2,500	2.556E+03	6.871E-02	4.504E-03	3.058E+02	4.237E-06	2.174E+00	9.251E-02	3.072E+01	
325PC902	Brentwood	2,500	2.552E+03	7.287E-02	4.504E-03	3.056E+02	4.249E-06	2.173E+00	9.197E-02	3.067E+01	
325PC9D1	Brentwood	2,500	2.231E+03	6.871E-02	4.504E-03	2.529E+02	3.634E-06	1.786E+00	8.243E-02	2.572E+01	
325PC9D2	Brentwood	2,500	2.225E+03	7.287E-02	4.504E-03	2.525E+02	3.638E-06	1.784E+00	8.143E-02	2.568E+01	
325PC9Q1	Brentwood	2,500	2.161E+03	6.871E-02	4.504E-03	2.062E+02	4.591E-06	1.515E+00	1.004E-01	2.760E+01	
325PC9Q2	Brentwood	2,500	2.155E+03	7.287E-02	4.504E-03	2.058E+02	4.571E-06	1.513E+00	9.997E-02	2.754E+01	
325PG9C1	Brentwood	2,500	2.536E+03	6.871E-02	4.504E-03	3.047E+02	4.147E-06	2.170E+00	8.987E-02	3.063E+01	
325PG9D1	Brentwood	2,500	2.311E+03	6.871E-02	4.504E-03	2.674E+02	3.760E-06	1.894E+00	8.401E-02	2.707E+01	
325PG9Q1	Brentwood	2,500	2.344E+03	6.871E-02	4.504E-03	2.310E+02	5.036E-06	1.704E+00	1.109E-01	3.082E+01	

335PC9D1	Brentwood	3,500	2.550E+03	6.871E-02	4.504E-03	3.053E+02	4.178E-06	2.171E+00	9.132E-02	3.072E+01
335PC9D2	Brentwood	3,500	2.545E+03	7.287E-02	4.504E-03	3.050E+02	4.187E-06	2.169E+00	9.022E-02	3.069E+01
335PC9Q1	Brentwood	3,500	2.392E+03	6.871E-02	4.504E-03	2.364E+02	5.160E-06	1.741E+00	1.139E-01	3.149E+01
335PC9Q2	Brentwood	3,500	2.389E+03	7.287E-02	4.504E-03	2.363E+02	5.178E-06	1.740E+00	1.133E-01	3.147E+01
335PG901	Brentwood	3,500	2.898E+03	6.871E-02	4.504E-03	3.635E+02	4.811E-06	2.602E+00	1.010E-01	3.619E+01
335PG902	Brentwood	3,500	2.897E+03	7.287E-02	4.504E-03	3.639E+02	4.835E-06	2.604E+00	1.006E-01	3.620E+01
335PG9C1	Brentwood	3,500	2.873E+03	6.871E-02	4.504E-03	3.600E+02	4.724E-06	2.576E+00	9.928E-02	3.590E+01
335PG9C2	Brentwood	3,500	2.883E+03	7.079E-02	4.504E-03	3.617E+02	4.768E-06	2.589E+00	9.895E-02	3.606E+01
335PG9D1	Brentwood	3,500	2.642E+03	6.871E-02	4.504E-03	3.217E+02	4.324E-06	2.292E+00	9.328E-02	3.224E+01
335PG9Q1	Brentwood	3,500	2.567E+03	6.871E-02	4.504E-03	2.612E+02	5.602E-06	1.937E+00	1.211E-01	3.479E+01
335PG9Q2	Brentwood	3,500	2.592E+03	7.287E-02	4.504E-03	2.648E+02	5.697E-06	1.964E+00	1.219E-01	3.525E+01
340PC901	Brentwood	4,000	2.804E+03	6.871E-02	4.504E-03	3.464E+02	4.667E-06	2.473E+00	9.961E-02	3.459E+01
340PC902	Brentwood	4,000	2.807E+03	7.287E-02	4.504E-03	3.475E+02	4.696E-06	2.480E+00	9.924E-02	3.466E+01
340PC9C1	Brentwood	4,000	2.655E+03	6.871E-02	4.504E-03	3.221E+02	4.380E-06	2.292E+00	9.509E-02	3.229E+01
340PC9C2	Brentwood	4,000	2.654E+03	7.287E-02	4.504E-03	3.221E+02	4.405E-06	2.292E+00	9.471E-02	3.227E+01

PRODUCT Manufactures EPDs



Environmental Product Declaration
According to ISO 14025

Stru

Declaration number
EPD-BFS-2010111-E

Institut Bauen und Umwelt e.V.
www.bau-umwelt.com

Environmental Product Declaration
For GSB-88, Asphalt System

Product Information
GSB-88 is an emulsified, gilsonite-modified pavement sealer and rejuvenator. The product rebinds the surface aggregate while sealing and rejuvenating the surface binder. It has been used extensively in both early stage pavement preservation, as well as reactive late stage applications for badly raveled and deteriorated roads, parking areas, and airfield runways and taxiways. It extends the life of asphalt pavement by an average of five years. It is applied with standard asphalt emulsion application equipment, generally asphalt distributors. In some cases it may be advisable to broadcast very light application of sand over the still wet GSB-88.


The analysis shown here was performed in Declaration Program, using the product cut is based on a life cycle assessment of GSB-2010. Environmental Product Declarations may not be comparable to this one.

Measurement Certification

Product Name	GSB-88
Product ID number(s)	N/A
Meets quality specification	Yes
Product Category Rule	En 12424
Product Category Rule Operator	En 12424
This EPD is valid until	Indefinite
Validator Name	UL
Validator Signature	
LCACP Registration Number	
Date	

Buzzi Unicem

ENVIRONMENTAL PRODUCT DECLARATION
NORTH AMERICAN SOFTWOOD LUMBER
AMERICAN WOOD COUNCIL
CANADIAN WOOD COUNCIL




The American Wood Council (AWC) and the Canadian Wood Council (CWC) are pleased to present this Environmental Product Declaration (EPD) for North American softwood lumber. This EPD was developed in compliance with ISO 14025 and ISO 21930 and has been verified under UL Environment's EPD program.

The EPD includes Life Cycle Assessment (LCA) results for all processes up to the point that planed and dry lumber is packaged and ready for shipment at the manufacturing gate; the cradle-to-gate product system includes forest management, logging, transportation of logs to lumber mills, sawing, kiln-drying, and planing.

The AWC and CWC represent wood product manufacturers across North America. Our organizations have undertaken numerous sustainability initiatives on behalf of our membership and we are pleased to present this document to show how we are doing. The publication of this EPD, which is based on rigorous LCA research, is our effort to back up with science what we know to be true – that wood products stand alone as a green building material.

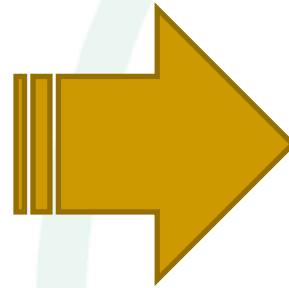
Please follow our sustainability initiatives at:
www.awc.org and www.cwc.ca



Supplier EPDs



Supplier EPDs

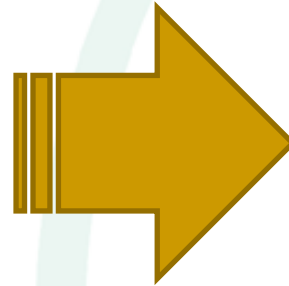


Product EPD

Product EPDs to Whole Building LCA



Product EPDs



Whole Building LCA

Environmental Product Declarations

Option 2 – Multi-Attribute Optimization

(1 point) 50% by Cost

- **Environmental Impact Reduction below industry average**– USGBC Approved Certification Program – (100% Value)
 - GWP
 - Ozone depletion
 - Eutrophication
 - Smog formation
 - Acidification
 - Depletion of nonrenewable energy

Environmental Product Declarations (Locally Sourced still matters)



MRC3: RESPONSIBLE SOURCING



Sourcing of Raw Materials

Option 1: Raw Material Source and Extraction

Reporting (1 point)

- **Manufacturer declared commitment (1/2 product)**
- **Corporate Sustainability Report (Third Party Verified CSR) (Full product)**



corporate

social responsibility

re·spon·si·bil·i·ty (ri spän'sə bil/

the condition of being responsible

responsibility for the error.] **2.** a th

that one is supposed to look after,

[Her education will be my *responsib*

spän'si·bil/i·ties, *pl.*

re·spon·si·ble (ri spän'sə b'l), *adj.*

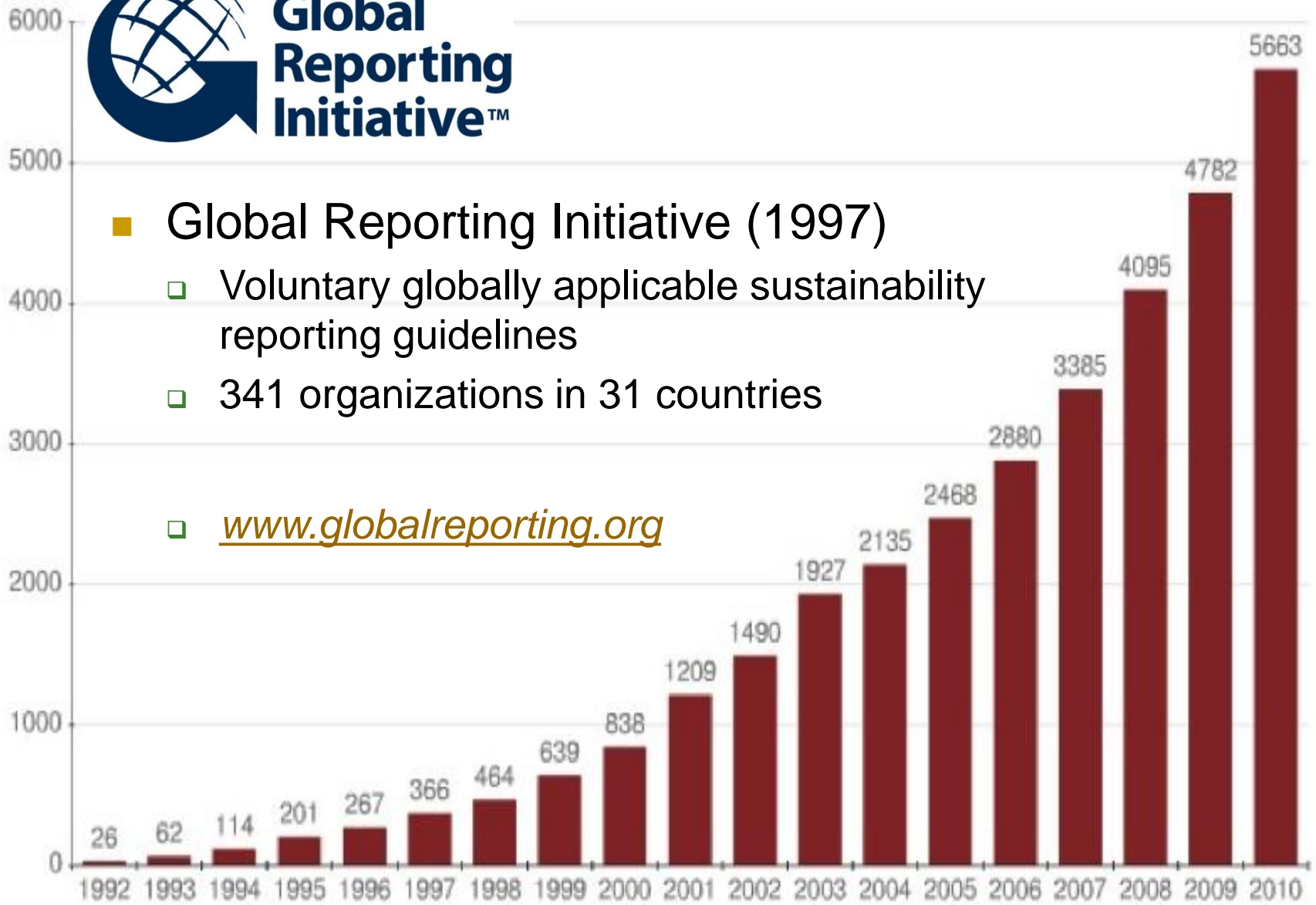
or expected to take care of something



**Global
Reporting
Initiative™**

■ **Global Reporting Initiative (1997)**

- Voluntary globally applicable sustainability reporting guidelines
- 341 organizations in 31 countries
- www.globalreporting.org



UN Global Compact -COP



HUMAN RIGHTS

- Principle 1 Businesses should support and respect the protection of internationally proclaimed human rights; and
- Principle 2 make sure that they are not complicit in human rights abuses.

LABOUR

- Principle 3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- Principle 4 the elimination of all forms of forced and compulsory labour;
- Principle 5 the effective abolition of child labour; and
- Principle 6 the elimination of discrimination in respect of employment and occupation.

ENVIRONMENT

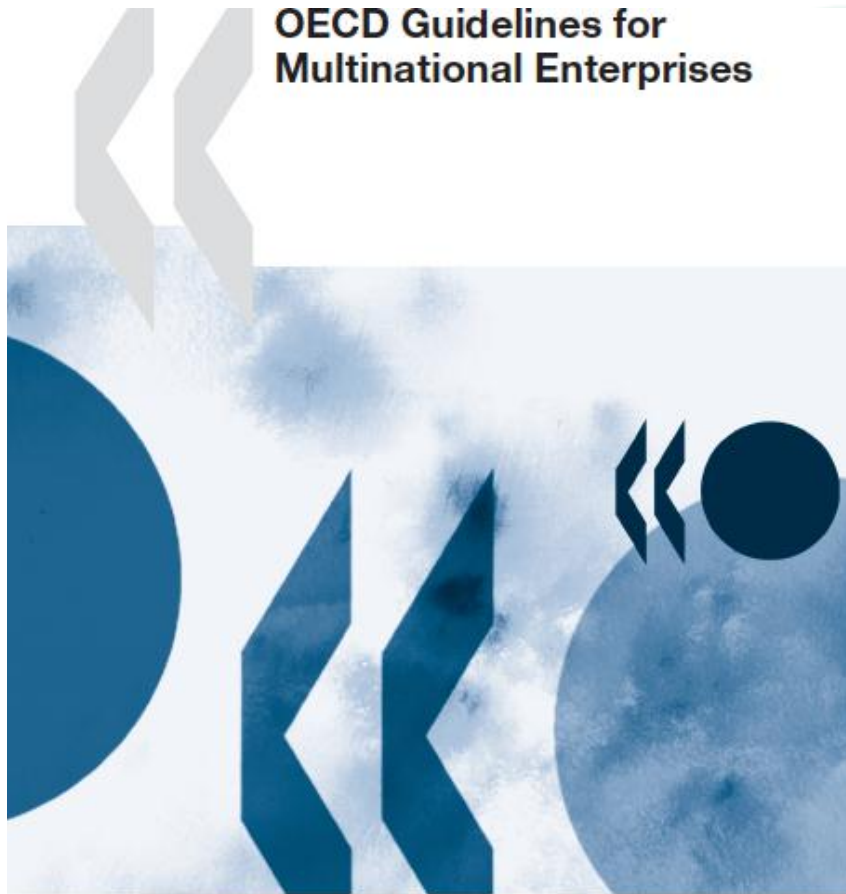
- Principle 7 Businesses are asked to support a precautionary approach to environmental challenges;
- Principle 8 undertake initiatives to promote greater environmental responsibility; and
- Principle 9 encourage the development and diffusion of environmentally friendly technologies.

ANTI-CORRUPTION

- Principle 10 Businesses should work against corruption in all its forms, including extortion and bribery.

The Practical Guide to the United Nations Global Compact
**COMMUNICATION
ON PROGRESS (COP)**
Creating, Sharing and Posting a COP

OECD Guidelines for Multinational Enterprises



- information disclosure
- employment and industrial relations
- the environment
- bribery
- consumer interests
- science and technology
- competition and taxation

ISO 26000: 2010 Guidance on Social Responsibility



Social responsibility: **7** core subjects



What's in the Report- GRI Example

Content, in context - 11 key issues, 33 indicators

■ Environmental Issues

- ❑ Climate change and energy (4 indicators)
- ❑ Ecosystem services (2 indicators)
- ❑ Local environmental impacts (4 indicators)

■ Health and Safety Issues

- ❑ Workforce protection (3 indicators)
- ❑ Product health, safety and environmental risks (1 indicator)
- ❑ Process safety and asset integrity (1 indicator)

■ Social and Economic Issues

- ❑ Community and society (4 indicators)
- ❑ Local content (3 indicators)
- ❑ Human rights (3 indicators)
- ❑ Business ethics and transparency (4 indicators)
- ❑ Labor practices (4 indicators)

MR Credit 3- Responsible Sourcing

- Option 2. Leadership Extraction Practices (1 point) 25% by Cost
 - ❑ Extended producer responsibility
 - ❑ Bio-based materials (Sustainable Agriculture Standard)
 - ❑ Wood products (FSC)
 - ❑ Materials reuse (salvaged, refurbished, or reused)
 - ❑ Recycled content (postconsumer + $\frac{1}{2}$ preconsumer)
 - ❑ USGBC approved program

Recycled Content

Use materials with recycled content such that the sum of post consumer recycled content plus 1/2 of the pre-consumer content



Post-Consumer: Waste material generated by households or by commercial, industrial and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.

Pre-Consumer: Material diverted from the waste stream during the manufacturing process.

Sourcing of Raw Materials



MRC4: MATERIAL INGREDIENTS



Material Ingredients

Option 1: Material Ingredients Reporting

(1 Point)

20 Permanently Installed Products

- **Manufacturer Inventory**
- **Health Product Declaration (HPD)**
- **Cradle to Cradle (Basic)**
- **USGBC Approved Program**
- **Inventoried to 1000 ppm**



Material Ingredients

Option 2: Material Ingredients Optimization

(1 Point) 25% by Cost

- ❑ **Manufacturer Inventory**
- ❑ **Cradle to Cradle Certification**
- ❑ **USGBC Approved Program**
- ❑ **International Alternate – REACH**



Option 3: Product Manufacturer Supply

Chain Optimization (1 point) 25% by Cost

- ❑ **Transparency of chemical ingredients**



Chemicals of Concern

REDLIST (Living Building)

the REDLIST

The Living Building Challenge publishes a “Red List” of materials to be avoided in buildings seeking certification under the Living Building Challenge. What’s on it?

- Asbestos ● Cadmium ● Chlorinated Polyethylene and Chlorosulfonated Polyethylene ● Chlorofluorocarbons (CFCs) ● Chloroprene (Neoprene) ● Formaldehyde ● Halogenated Flame Retardants ● Hydrochlorofluorocarbons (HCFCs) ● Lead ● Mercury ● Petrochemical Fertilizers and Pesticides ● Phthalates ● Polyvinyl Chloride (PVC) ● Wood treatments containing creosote, arsenic or pentachlorophenol ●

BANNED LIST (C2C)

TECHNICAL

- ❑ Arsenic
- ❑ Cadmium
- ❑ Chromium
- ❑ Mercury
- ❑ PVC
- ❑ PCB + more

BIOLOGICAL

- ❑ Arsenic
- ❑ Cadmium
- ❑ Mercury
- ❑ Lead
- ❑ PVC
- ❑ PBDE + more
- ❑ Penta-BDE

Chemical Abstract Service (CAS)

SUBSTANCE DETAIL

Get References Get Reactions Get Commercial Sources Get Regulatory Information Send to SciPlanner

Return

CAS Registry Number: 58-08-2

Ca H10 N4 O2

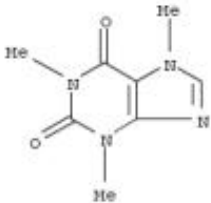
1H-Purine-2,6-dione, 3,7-dihydro-1,3,7-trimethyl-

Caffeine (8CI); 1,3,7-Trimethyl-2,6-dioxopurine; 1,3,7-Trimethylxanthine; 3,7-Dihydro-1,3,7-trimethyl-1H-purine-2,6-dione; 7-Methyltheophylline; Alert-Pep; Asia migrine; Cafalgine; Cafeina; Caffedrine; Caffein; Cafipel; DHCplus; Dasin; Diurex; Durvitan; Guaranine; Hycomine; Koffein; Mateina; Methyltheobromine; Midron extra; Miudol; NSC 5036; New Cetamol; No-Doz; Palergot-C; Phensal; Propoxyphene Compound 65; Refresh'n; SK 65 Compound; Shape Plus; Stay Alert; Stim; Synalgos; Thein; Theine; Tri-Aqua; Wigraine

Deleted CAS Registry Numbers: 71701-02-5, 95789-13-2

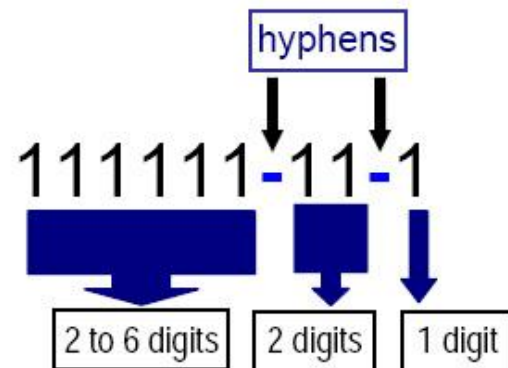
Source of Registration: CA

~30,466 References



CAS REGISTRYSM

Example CAS Number:



GreenScreen

This chemical passes all of the criteria.

BENCHMARK 4

ready biodegradability (low P) + low B + low Human Toxicity + low Ecotoxicity (+ additional ecotoxicity endpoints when available)

Prefer—Safer Chemical



BENCHMARK 3

- a. moderate P or moderate B
- b. moderate Ecotoxicity
- c. moderate Human Toxicity
- d. moderate Flammability or moderate Explosiveness

Use but Still Opportunity for Improvement



If this chemical and its break-down products pass all of these criteria, then move on to Benchmark 4

BENCHMARK 2

- a. moderate P + moderate B + moderate T (moderate Human Toxicity or moderate Ecotoxicity)
- b. high P + high B
- c. (high P + moderate T) or (high B + moderate T)
- d. moderate Human Toxicity for any priority effect or high Human Toxicity
- e. high Flammability or high Explosiveness

Use but Search for Safer Substitutes



If this chemical and its break-down products pass all of these criteria, then move on to Benchmark 3

BENCHMARK 1

- a. PBT: high P + high B + high T¹ (high Human Toxicity¹ or high Ecotoxicity)
- b. vPvB: very high P + very high B
- c. vPT (vP + high T) or vBT (vB + high T)
- d. high Human Toxicity for any priority effect²

Avoid—Chemical of High Concern



If this chemical and its break-down products pass all of these criteria, then move on to Benchmark 2



Cradle2Cradle (C2C)



- Material Health
- Material Reutilization
- Renewable Energy
- Water Stewardship
- Social Fairness

- Certification Levels
 - Basic
 - Bronze
 - Silver
 - Gold
 - Platinum

Health Product Declaration (HPD)



- IDENTIFY
- INVENTORY
- ASSESS
- COMPLIANCE
- ACCESSORIES
- SUMMARIZE
- PUBLISH


HPD- Example

Product Identification Information Manufacturer: <input type="text" value="GAF"/> Product ID: <input type="text" value="EverGuard TPO"/> CSI MasterFormat(s): <input type="text" value="07545"/> Manufacturer URL: <input type="text" value="www.GAF.com"/> Product URL: <input type="text" value="http://www.gaf.com/Roofing/Commercial"/>	Product Description <input type="text" value="Single-Ply roofing membrane for commercial installations."/>	Manufacturer Contact Information Contact Name: <input type="text" value="Matt Munro"/> Phone: <input type="text" value="(973) 628-3963"/> Email: <input type="text" value="mmunro@gaf.com"/> Mailing Address: <input type="text" value="GAF"/> <input type="text" value="1361 Alps Road, Bldg 2-2"/> <input type="text" value="Wayne, NJ 07470"/>
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2 CONTENTS DISCLOSURE

Certifying Party*: 1st 2nd 3rd
* First: Manufacturer's self-declaration; Second: Verification by trade association or other interested party; Third: Verification by independent certifier (idea).

Disclosure level of intentionally added content (100% is ideal): %

All known residuals disclosed to: 

The manufacturer affirms that all known material content were screened for chemicals of concern and health warning listings using:

All ingredients to be screened against chemicals listed on any of the Health Product Declaration Priority lists at www.hpdownworkinggroup.org/prioritylists

All ingredients are assessed against the HPD Priority Lists (check at least one):

- High Hazards List
- Precautionary Lists
- Building Certification Lists
- Other:

Total Volatile Organic Compound Content

Material: g/l

Regulatory: g/l

Total incl. EPA exempt: g/l

Zero VOC tints: Yes No N/A

3 CONTENTS IN ORDER OF QUANTITY (Complete list continues onto next page)

	Name	Identifier	%	Health Hazard Warnings and Certification Lists	PC*		P†		Nano*		Role
					RC*	%	yes	no	yes	no	
1	Thermoplastic Polyolefin resin (TPO)	9010-79-1	65	No warnings found	0	0	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Resin
2	Magnesium Oxide	1309-42-8	20	No warnings found			<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Flame retardant
3	Titanium Dioxide	13463-67-7	1.8	IARC Group 2B. Dust inhalation hazard. Prop 65			<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Pigment
4	Proprietary	31570-04-4	.33	No warnings found			<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	UV/Heat Stabilizer

REACH



- Registration
- Evaluation
- Authorization
- Restriction

Material Ingredients



**100 Miles
(200% Cost)**

**Structure and enclosure not
more than 30% of the value**

Exemplary Performance (Innovation)

- Environmental Product Declaration
 - Option 1. Source at least 40 qualifying products from 5 manufacturers.
 - Option 2. Purchase 75%, by cost, of permanently installed building products that meet required attributes.

- Sourcing of Raw Materials
 - Option 1. Source at least 40 qualifying products from 5 manufacturers.
 - Option 2. Purchase 50%, by cost, of the total value of permanently installed building products that meet responsible extraction criteria.

- Material Ingredients
 - Option 1. Source at least 40 qualifying products from 5 manufacturers
 - Option 2. Source at least 50%, by cost, of permanently installed building products that meet the credit criteria.



What Does This Mean To You?



OPPORTUNITY

Be part of the solution

It's the right thing to do



OPPORTUNITY Demanded by A/E Firms



OPPORTUNITY

Defined
metrics for
environmental
impacts

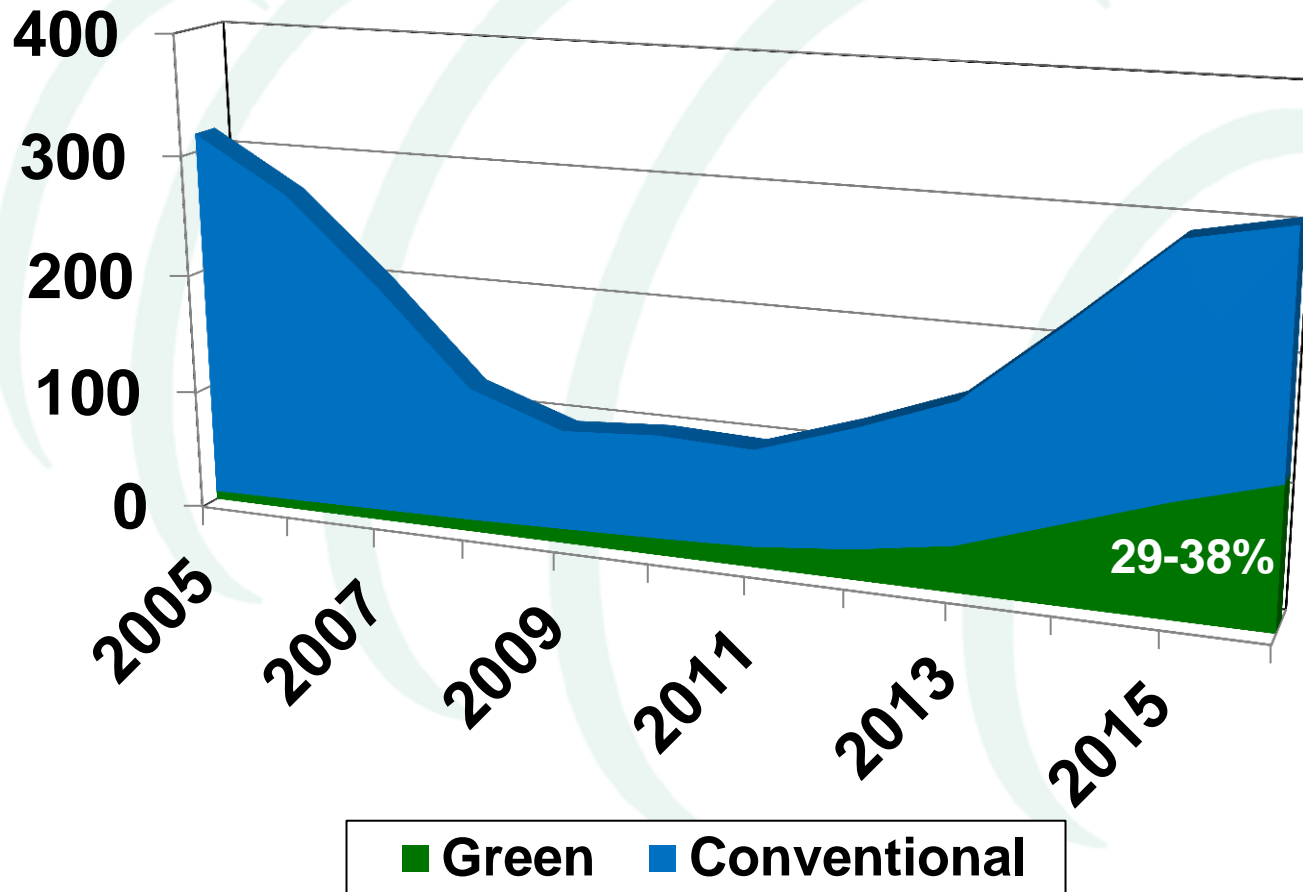




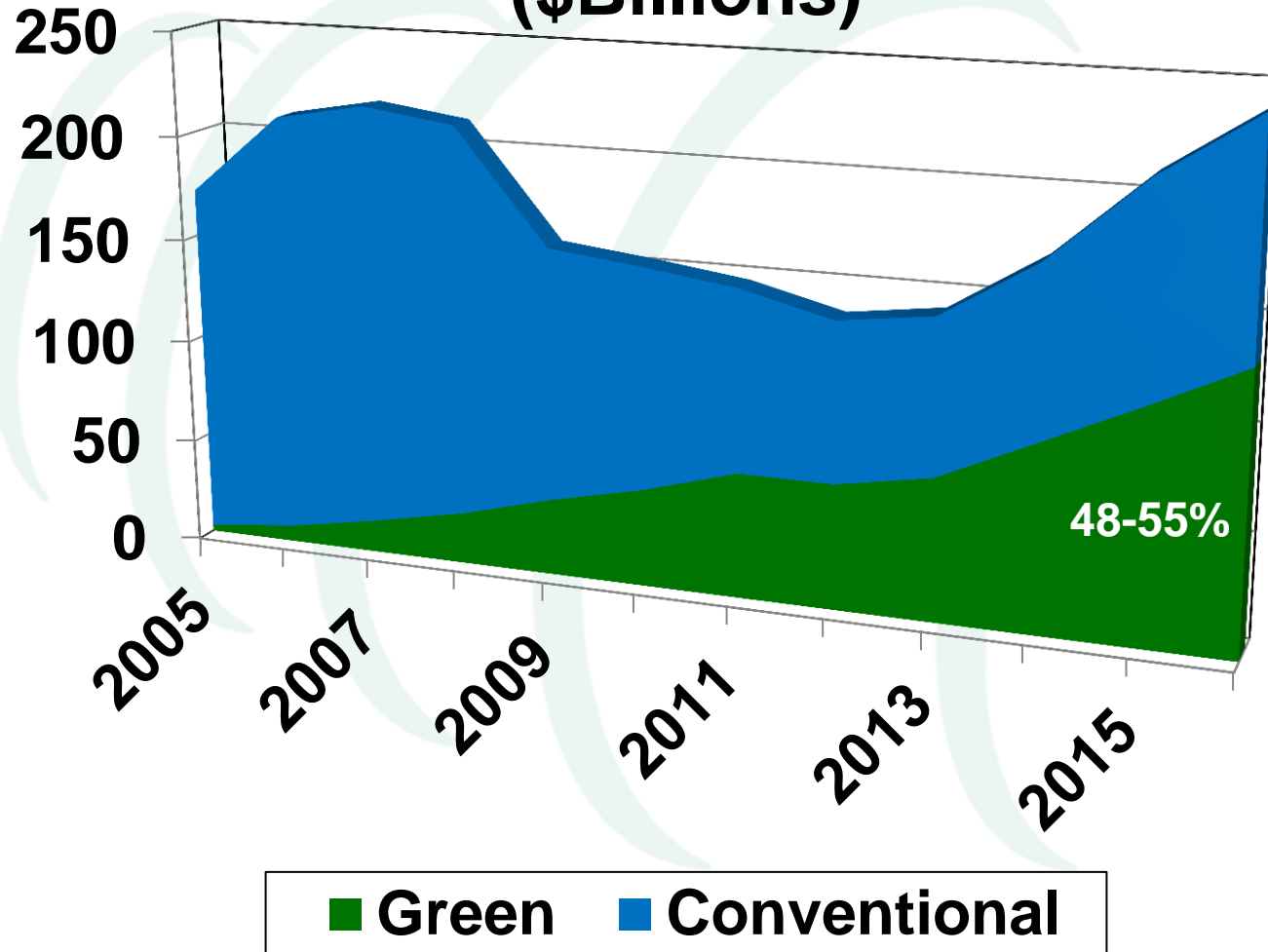
OPPORTUNITY

**Potential
market
advantage for
early adopters**

U.S. Residential Green Building Market 2005-2016 (\$Billions)

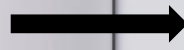


U.S. Nonresidential Green Building Market 2005-2016 (\$Billions)



OPPORTUNITY

**Prescriptive
Specification**



**Performance
Specification**

~~Concrete
shall have
minimum fly
ash content
of 50%~~

Concrete shall
have maximum
Global Warming
Potential of
350 kg CO₂e/m³

CHALLENGE

**Just more
paperwork**



A photograph of a library with wooden bookshelves filled with books. A lamp is lit on the left. In the foreground, an open book with a marbled cover lies on a table. The text 'CHALLENGE' is overlaid on the left side of the image.

CHALLENGE

Just more regulation



U.S. CONCRETE INDUSTRY

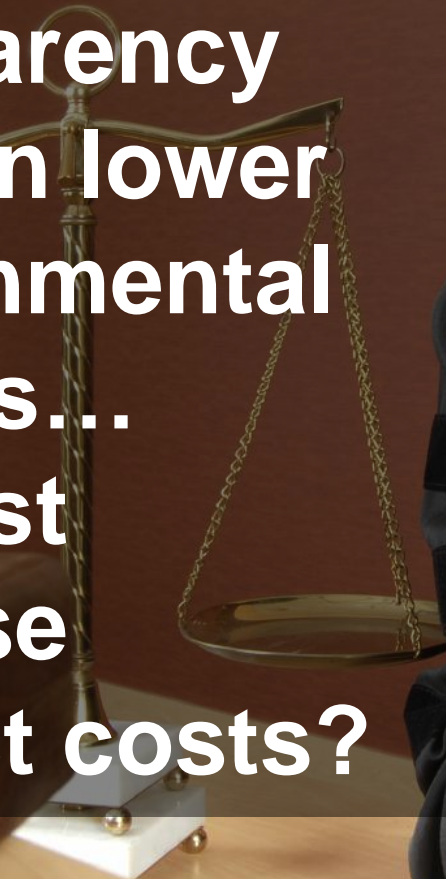
**5000 Plants
1000 Products/Plant**

**5,000,000 EPDs
and HPDs?**

5000 CSRs?

CHALLENGE

Will
transparency
result in lower
environmental
impacts...
...or just
increase
product costs?



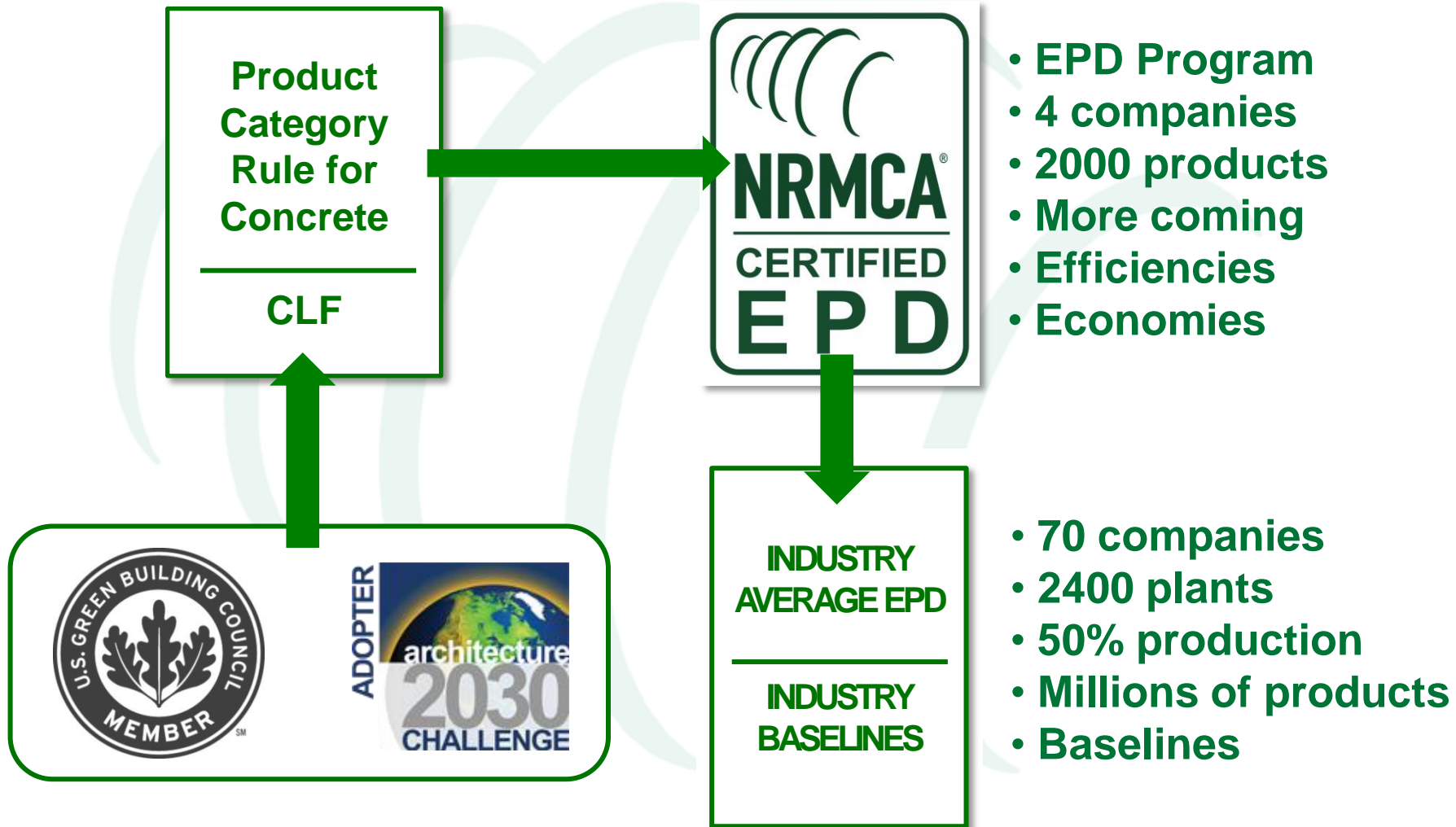
BUT DOES IT REALLY MATTER?

It's here whether we like it or not

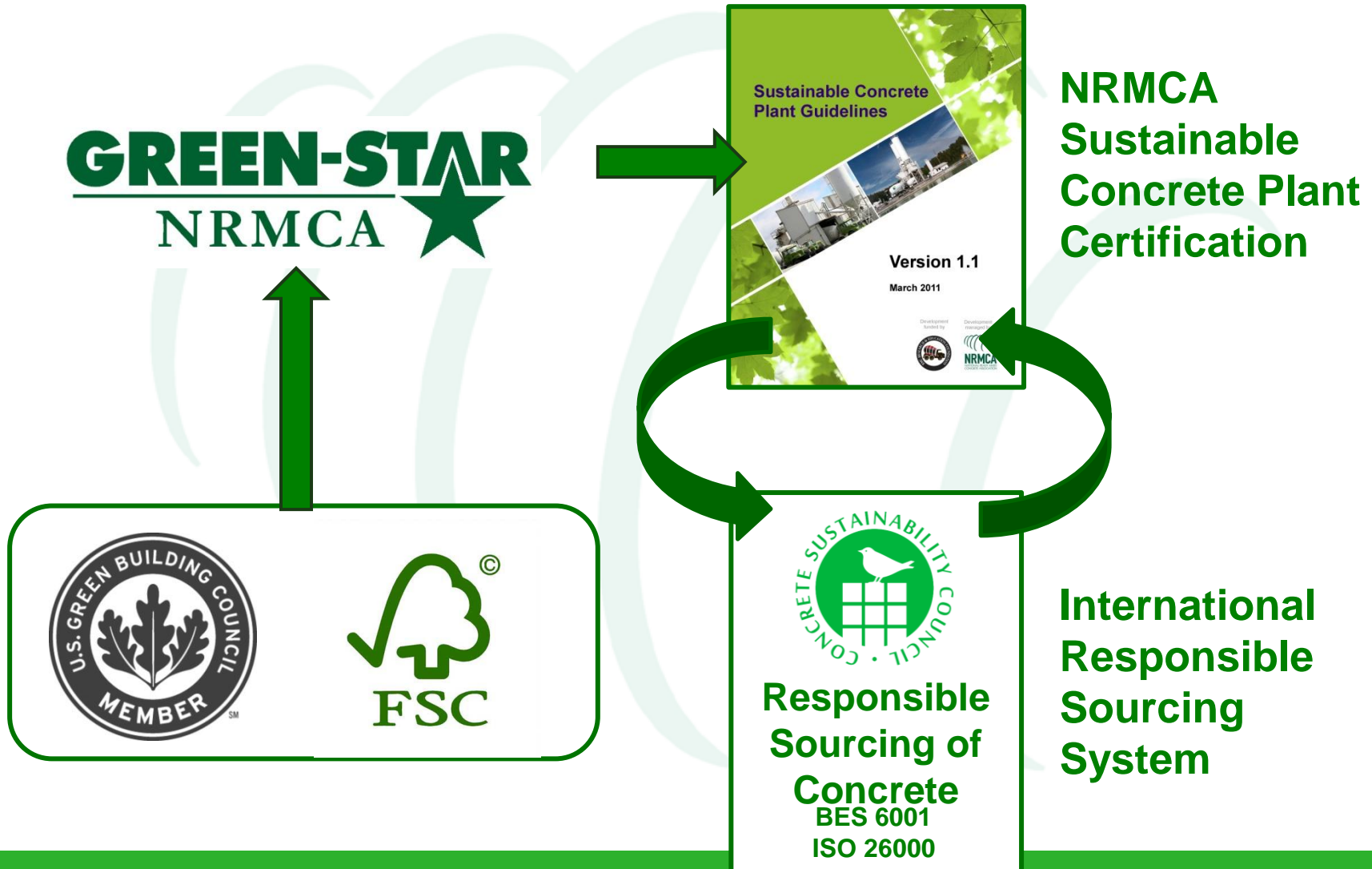


What's NRMCA Doing to Help?

Environmental Product Declarations



Responsible Sourcing



Material Ingredient Disclosure



**NRMCA /
RMCREF
Project
(ARUP)**



- Ind. Ave. HPD
- NRMCA HPD Program

**NRMCA
member
education**

www.nrmca.org/sustainability

Lionel Lemay, PE, SE, LEED AP
llemay@nrmca.org

