

Environmental Product Declarations: Part 1

Tien Peng, LEED AP+, CGP, PMP
Sr. Dir, Sustainability, Codes and
Standards



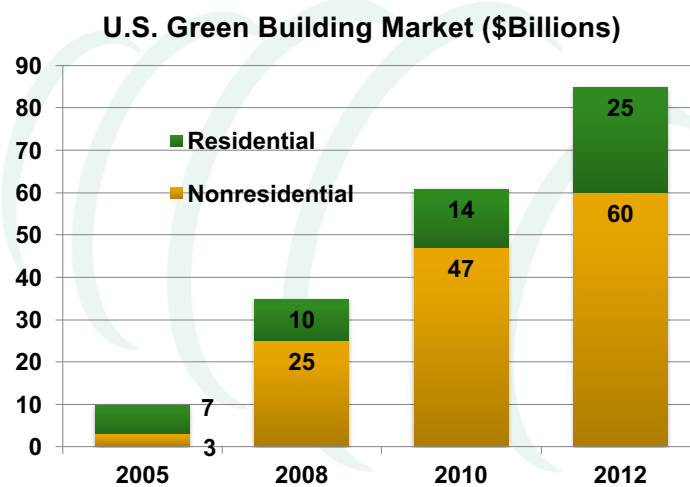
Learning Objectives (Part 1+2)

- Identify the imperative for transparency
- Become aware of LEED v4 Material and Resources changes
- Understand Environmental Product Declarations (EPD)
- Realize the development of the Product Category Rule (PCR) for Concrete
- Introduce NRMCA EPD Program Operator status

So why should you care?

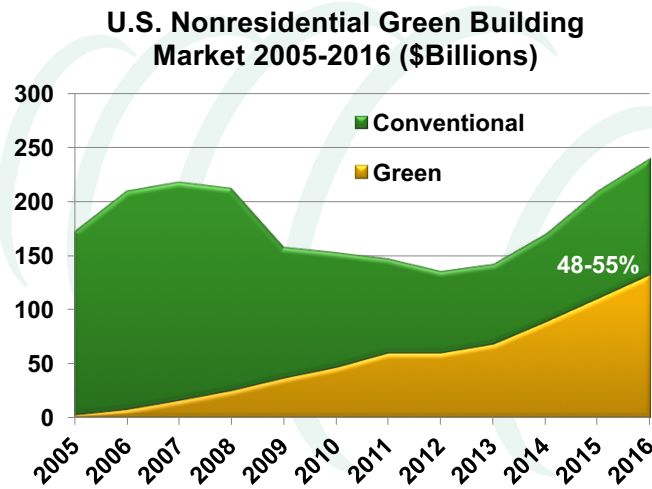


Opportunity for growth!



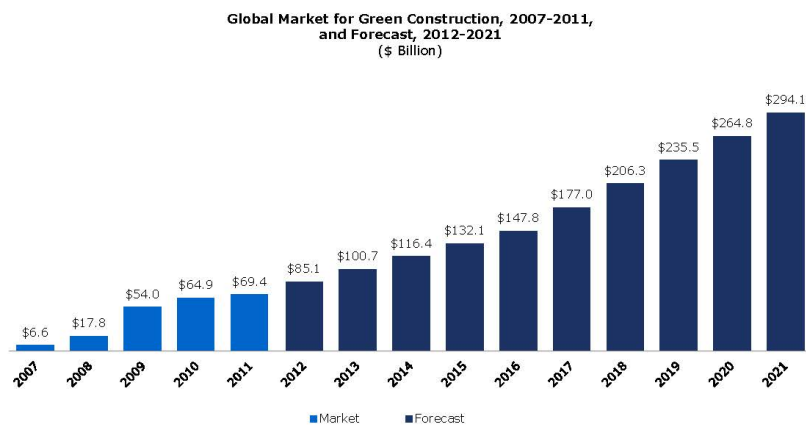
Source: McGraw-Hill Green Outlook 2013

Opportunity for growth!



Source: McGraw-Hill Green Outlook 2013

Worldwide trend



Source: SBI Research, Green Building Materials and Construction, 3rd Edition

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GREEN BUILDING

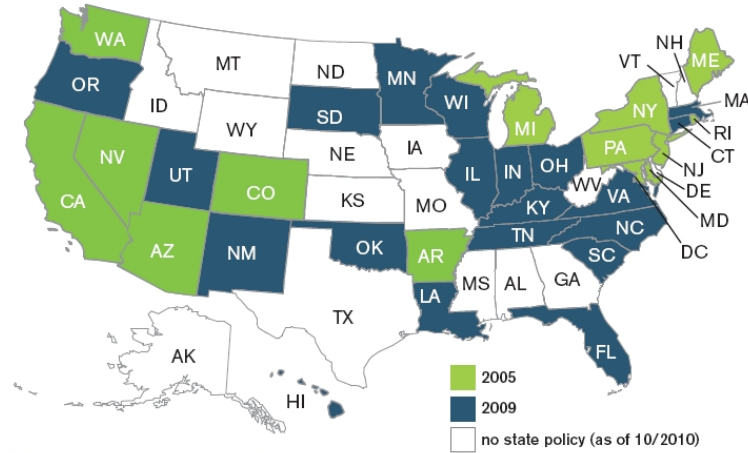
LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED V4)

Market Driver

- **Federal Government – Virtually every** federal agency has mandated LEED certification including:
 - GSA, the largest commercial property holder in the US
- **State Government – 36 states** have enacted various LEED mandates
- **City Government – 105 cities** have mandated LEED requirements
- **Code** – A growing number of municipalities (San Francisco, Washington, Boston, LA) have implementing mandates
- **Private Sector Economics**
 - LEED Class A buildings on average \$10/ft more lease rate
 - Vacancy rates were 4.2% lower for LEED

Green Building Adoption

Location of State-Level Green Building Policies or Legislation
January 2005–October 2010



Source: McGraw-Hill Construction Research and Analytics, January 2005–October 2010.

LEED v4 Credit Evolution



MR: Materials and Resources



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

MR: Building Life Cycle Impact Reduction

Option 4 Whole Building LCA (3 points)

- Impact reduction of 10% from Reference Building
- *At least* 60 year life span
- Not only focused on CO₂ – via ISO 14044
 - Reduce GWP of CO₂ (Required)
 - Reduce ozone depletion (CFC)
 - Land /water Acidification
 - Eutrophication (phosphates)
 - Tropospheric Ozone (NO_x)
 - Non renewable energy



MR: Building Product Disclosure And Optimization (3 Credits)

1. Environmental Product Declarations
2. Sourcing Of Raw Materials
3. Material Ingredients

❖ Transparency

❖ Third Party Verification

1. 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 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 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

1. Environmental Product Declarations

Option 2 – Multi-Attribute Optimization (1 point)

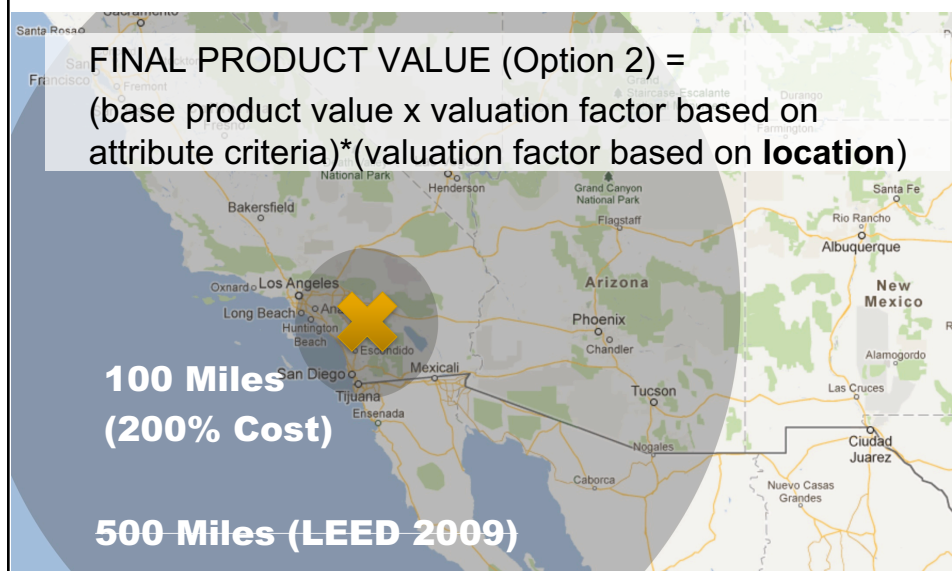
50% by Cost

- **Environmental Impact Reduction below industry average**– USGBC Approved Certification Program – (? Value, presumably full)

- GWP
- Ozone depletion
- Eutrophication
- Smog formation
- Acidification
- Depletion of nonrenewable energy

1. Environmental Product Declarations

FINAL PRODUCT VALUE (Option 2) =
 (base product value x valuation factor based on
 attribute criteria)*(valuation factor based on **location**)



2. 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)



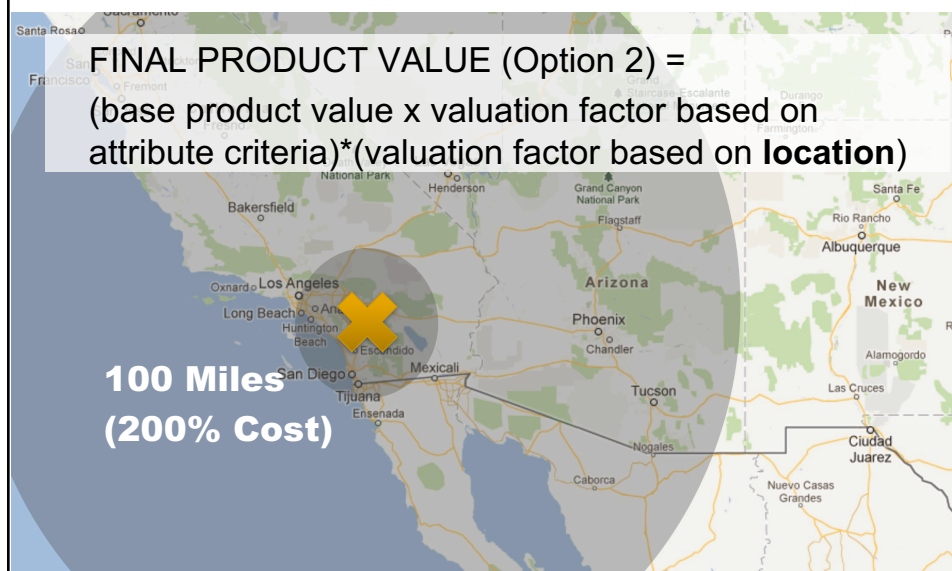
2. Sourcing of Raw Materials

Option 2: Leadership Extraction Practices (1 point)

- 25% By Cost
- Extended producer responsibility (1/2 Value)
- Bio-based- Sustainable Agriculture
- New Wood – FSC
- Material Reuse – Salvage, Refurbished
- Recycled Content – pre/post consumer
- USGBC Approved Program



2. Sourcing of Raw Materials



3. Material Ingredients

Option 1: Material Ingredients Reporting (1 Point)

20 Permanently Installed Products

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



3. Material Ingredients

Option 2: Material Ingredients Optimization

(1 Point) 25% by Cost

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



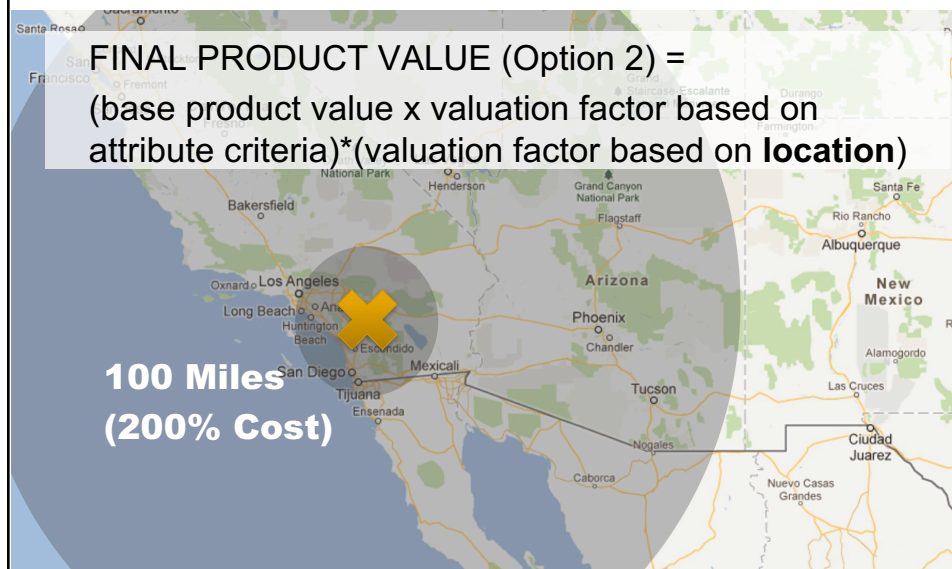
Option 3: Product Manufacturer Supply Chain Optimization (1 point)

- **Transparently of chemical ingredients**



3. Material Ingredients

FINAL PRODUCT VALUE (Option 2) =
 (base product value x valuation factor based on
 attribute criteria)*(valuation factor based on **location**)

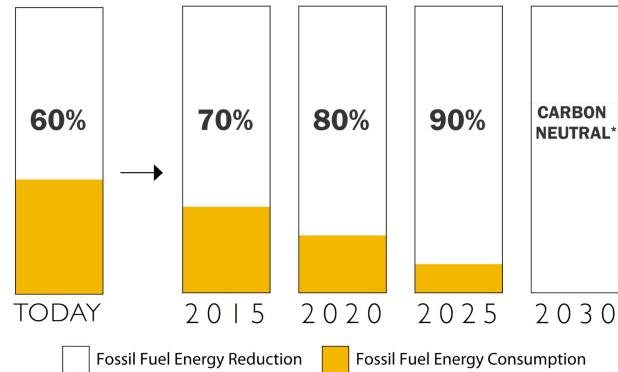




WHO's SIGNED ON?



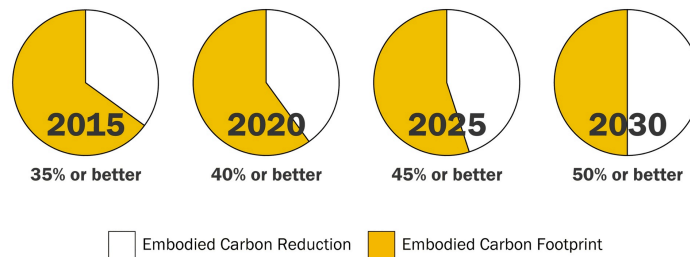
2030 Challenge for Buildings



The 2030 Challenge

Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved.
 *Using no fossil fuel GHG-emitting energy to operate.

2030 Challenge for Products

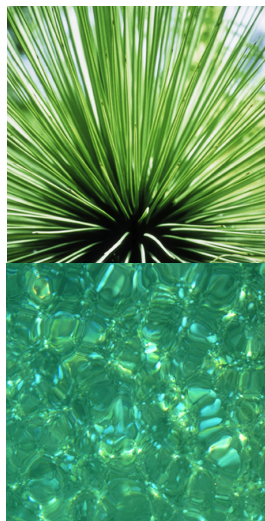


The 2030 Challenge for Products

Source: ©2011 2030, Inc. / Architecture 2030. All Rights Reserved.



CONCEPTS



- Will use the “model” code approach that provides communities the ability to modify.
- Minimum & advanced levels of performance (green & high-performance buildings).
- Written in mandatory language that provides a new regulatory framework.
- Work as an overlay to the ICC Family of Codes.
- Allow jurisdictional options beyond IGCC baseline.

Chapter 5 Materials & Resources

503.3 Building material life cycle assessment. The execution of a building material *life cycle assessment* shall be performed...



INFRASTRUCTURE
ISI ENVISION

BACKGROUND

- Links community quality of life
- Accounts for environmental and human capital
- 10 Primary criteria
- 74 sub criteria
- Graduated performance achievement
- Calculator



LD3.3 EXTEND USEFUL LIFE

INTENT:

Extend a project's useful life by designing the project in a way that results in a completed works that is more durable, flexible, and resilient.

METRIC:

The degree to which project team incorporates full life cycle thinking in improving the durability, flexibility and resilience of the project.

LEVELS OF ACHIEVEMENT

(1) Marginal extensions.

Marginal incursion into project life cycle. Nothing beyond construction. Considerations of flexibility, durability, and resilience are minimally considered. (A)

(3) Nudging the boundaries.

A few directed extensions in the design, addressing flexibility, durability and resilience. More specific considerations to extending the useful life of the project. The project owner, working with the designer, expands considerations beyond the point of project delivery. They seek to expand the useful life of the delivered project by adding additional considerations of functionality that are useful to the owner: durability and resilience, ease of upgrading and expansion.

(6) Pushing the boundaries.

Project owner and designer push boundaries to improve overall performance across the useful life of the project. Project owner, working with the designer, expands considerations to encompass future owners. Flexibility features are added to the design for future alternative uses. Expanded consideration of durability and resilience. Use materials that are easily adaptable for changing configurations, retrofits or repairs. Focus is on areas of short-term payback. (A, B, C)

(12) Extending the boundaries.

The project team has broad latitude to explore ways to extend the useful life of the project. The project team uses that latitude to expand opportunities to add to the project's useful life, improve durability and resilience, and ease retrofitting and repair. Project includes investment in areas of long-term payback. (A, B, C)

RA1.2 SUPPORT SUSTAINABLE PROCUREMENT PRACTICES

INTENT:

Obtain materials and equipment from manufacturers and suppliers who implement sustainable practices.

METRIC:

Percentage of materials sourced from manufacturers who meet sustainable practices requirements.

LEVELS OF ACHIEVEMENT

(2) Basic sustainable sourcing.

Written project team procurement policies are in place. Some high level criteria for use of suppliers that have sustainable procurement policies and practices. No targets set. A modest amount of materials, supplies and equipment (15%) is purchased from manufacturers and suppliers that arguably follow sustainable practices . (A, B)

(3) Modest sustainable suppliers portfolio.

The project team has a defined program for sustainable procurement. The selection of manufacturers and suppliers uses basic triple bottom line criteria. 25% of the purchased materials and supplies meet these criteria. (A, B)

(6) Strong supplier evaluation practices.

The project team has a well-defined program for sustainable procurement. Increased breadth of environmental and social criteria. Increased reliance on third-party certified materials and supplies, e.g., ENERGY STAR, Forest Stewardship Council, Green Seal. 50% of the purchased materials and supplies meet sustainable procurement policies. (A, B, C)

(9) Exceptional sustainable sourcing.

The project team has a strong program for sustainable procurement with clear supplier performance specifications stating the characteristics of the products and materials to be supplied, packaging, use, disposal and product takeback. Increased emphasis on supplier social and ethical performance. 75% of the purchased materials and supplies meet sustainable procurement policies. (A, B, C, D)

OPTION 1





Questions?

END OF PART 1

