



# Materials & Resources in LEED v4.1

BuildingGreen Webinar

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# LEARNING OBJECTIVES

- ✓ Articulate the main goals of LEED v4.1 technical development, including updates to the Building Product Disclosure & Optimization credits
- ✓ Identify key LEED v4.1 Materials & Resources prerequisites and credits for success, including construction & demolition waste management prerequisite
- ✓ Identify how LEED v4.1 supports embodied carbon, circular materials cycles, and human & ecological health, including IEQ low emitting materials credit
- ✓ Find resources and tips on how to get involved with LEED v4.1

- 1 Welcome!
- 2 LEED v4.1
- 3 Materials & Resources
- 4 Questions





*green buildings  
for everyone  
within this  
generation*

# ACTIVE VOLUNTEERS

USGBC's volunteers make a difference.

COMMUNITY VOLUNTEERS CONTRIBUTE  
MORE THAN **303,150** HOURS ANNUALLY, WHICH  
IS VALUED AT **\$7 MILLION** U.S. DOLLARS









# 95,000+

COMMERCIAL LEED PROJECTS

# 20 billion

TOTAL SQUARE FEET PARTICIPATING IN LEED

# 2.4 Million

CERTIFIED SQUARE FEET PER DAY



# 201,000

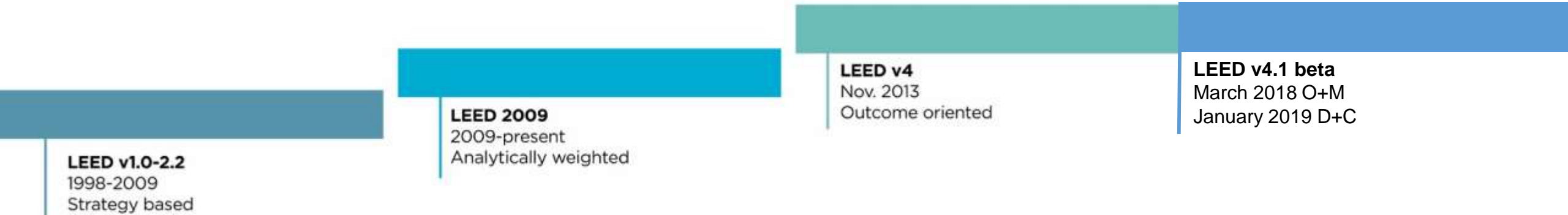
TOTAL LEED PROFESSIONALS

# 1.6 million

RESIDENTIAL UNITS REGISTERED & CERTIFIED



## Evolution of LEED



A horizontal timeline illustrating the evolution of LEED certification. It consists of four colored rectangular blocks of increasing length, each representing a different version of the standard. The blocks are colored in a gradient from dark blue to light blue. Each block has a vertical line extending downwards to a text label.

**LEED v1.0-2.2**  
1998-2009  
Strategy based

**LEED 2009**  
2009-present  
Analytically weighted

**LEED v4**  
Nov. 2013  
Outcome oriented

**LEED v4.1 beta**  
March 2018 O+M  
January 2019 D+C



LEED v4.1 O+M

# What's new?

Data as documentation

Minimum performance scores

Simplified rating system

7 remaining prerequisites

10 additional credits

Updates to prerequisite & credit language

Addresses interiors

Certification is annual





# Goals for v4.1

Remove  
Market  
Barriers  
from v4

Ensure  
Leadership

Expand the  
Market

Measure  
Performance

Building Design + Construction  
Interiors Design + Construction



## LEED CREDIT CATEGORIES

LOCATION AND TRANSPORTATION

SUSTAINABLE SITES

WATER EFFICIENCY

ENERGY AND ATMOSPHERE

**MATERIALS AND RESOURCES**

INDOOR ENVIRONMENTAL QUALITY

INNOVATION & PILOT CREDITS



## LEED v4.1    Materials and Resources



# LEED SYSTEM GOALS



Reduce contribution to global climate change



Enhance individual human health



Protect and restore water resources



Protect and enhance biodiversity and ecosystem services



Promote sustainable and regenerative material cycles



Build a green economy



Enhance community quality of life



# LEED SYSTEM GOALS



Reduce contribution to global climate change



Enhance individual human health



Protect and restore water resources



Protect and enhance biodiversity and ecosystem services



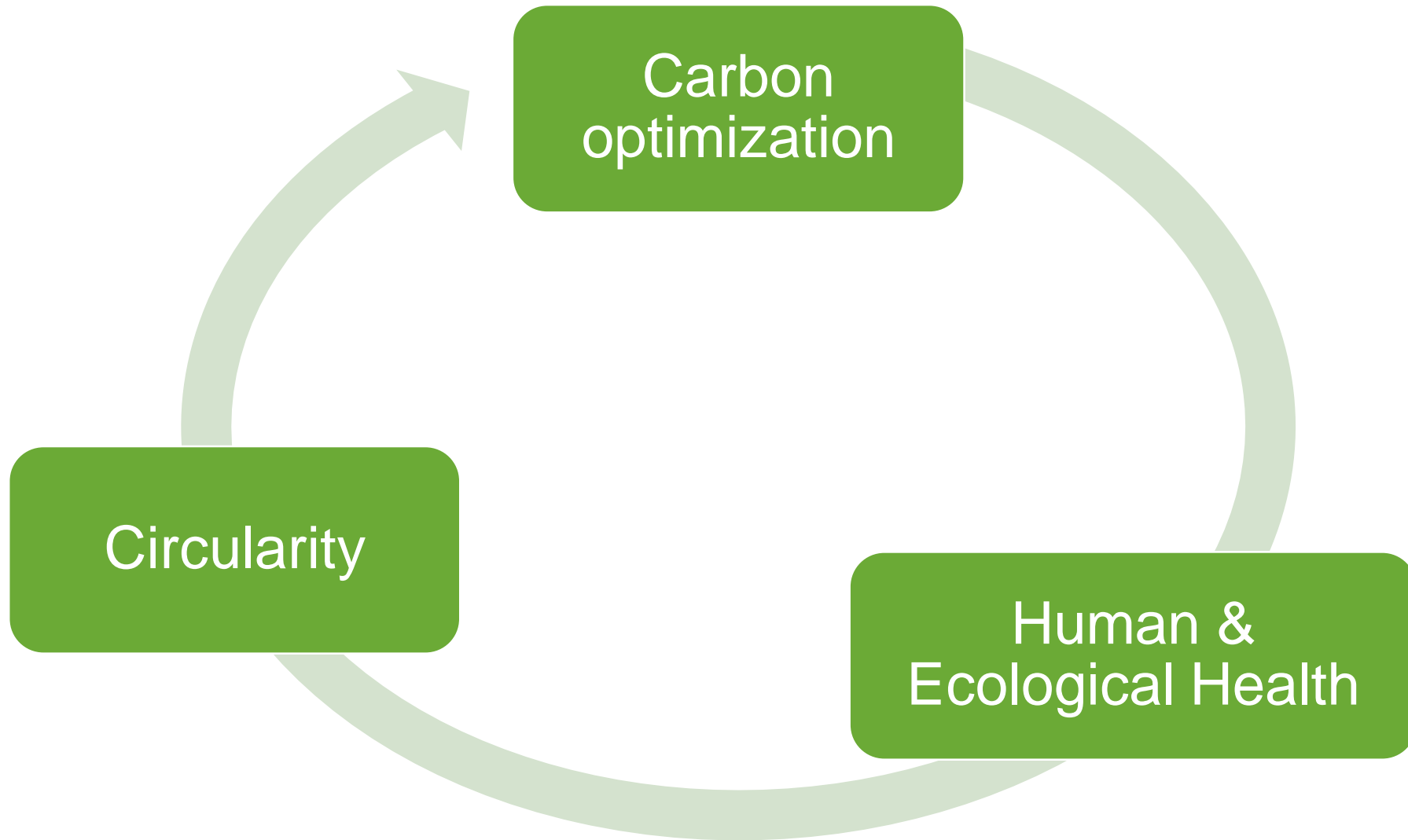
Promote sustainable and regenerative material cycles



Build a green economy



Enhance community quality of life





# MATERIALS & RESOURCES

## Prerequisites

Storage and collection of recyclables

Construction and demolition waste  
management planning

## Credits

*Building life-cycle impact reduction\*\**

*Interiors life-cycle impact reduction\**

*Long-term commitment\**

Building product disclosure and optimization -  
environmental product declarations

Building product disclosure and optimization - sourcing  
of raw materials

Building product disclosure and optimization - material  
ingredients

Construction and demolition waste management

*\* ID+C Only*

*\*\* BD+C Only*



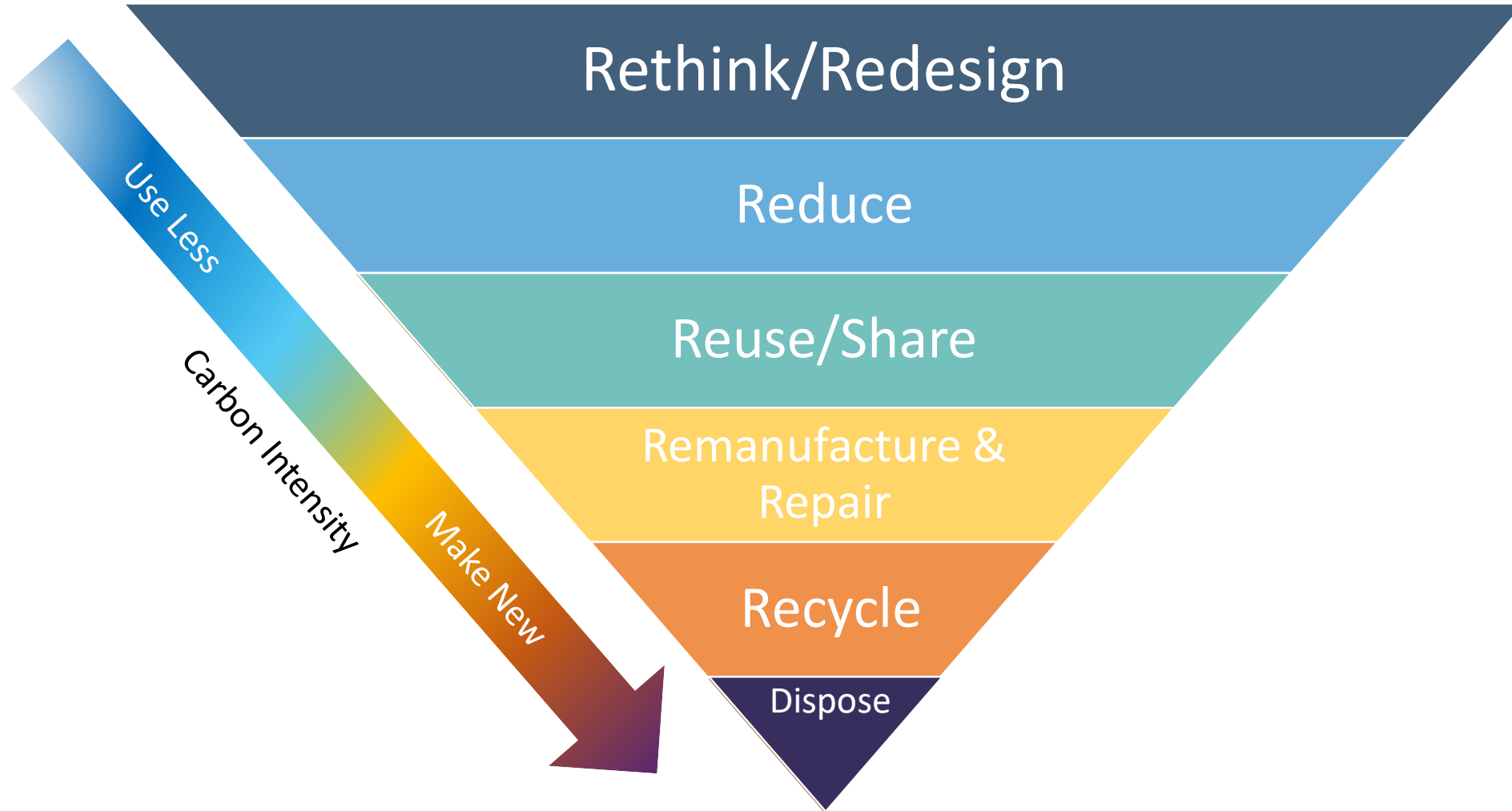


**HIGHLIGHTS**

# **EMBODIED CARBON**



# More Circular = Less Carbon



# Carbon reduction throughout the life-cycle







## Strategies for reducing embodied carbon in LEED

- Construction and demolition waste management planning
- **Building life-cycle impact reduction**
- **Building product disclosure and optimization - EPDs**
- Building product disclosure and optimization - sourcing of raw materials
- Construction and demolition waste management



MORE ACCESSIBLE

## Building life-cycle impact reduction

Credit

**Option 3. Building and Material Reuse – simplified calculation methodology**

- **Brought back LEED v2009 methodology with updated thresholds**



MORE ACCESSIBLE

## Building life-cycle impact reduction

Credit

### Option 4. Whole-Building Life-Cycle Assessment

Path 1: Conduct a life cycle assessment of the project's structure and enclosure (1 point)

Path 2: 5% reduction (2 points)

Path 3: 10% reduction (3 points)

Path 4: 20% reduction + 20% reuse (4 points)



ENVIRONMENTAL PRODUCT DECLARATION

**CASHMERE®**

CERTAINTED  
CASHMERE® AND FINE FISSURED HIGH NRC MINERAL FIBER  
CEILING PANELS.



*Two families of ceiling products with a range of aesthetic, acoustical, and other performance properties to meet your needs in education, office, and healthcare buildings.*



MORE ACCESSIBLE

## Building product disclosure and optimization – environmental product declarations

Credit

### Option 1. Environmental Product Declaration (EPD)

Choose 20 products for 1 point

*(10 products for ID+C, Core & Shell, and Warehouse/Distribution Centers)*

\* Product-specific Type III EPD with external verification and external critical review = 1.5 products

\* All other product LCAs or EPDS = 1 product

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## Building product disclosure and optimization – environmental product declarations

Credit

### Option 2. Multi-Attribute Optimization

Cost requirement lowered to 10%

Option for #of products (10 for all project types)

*New pathways reward stepwise progression towards leadership*



# Building product disclosure and optimization – environmental product declarations

## Credit

### Option 2. Multi-Attribute Optimization

- i. **Action Plan:** Reward manufacturer progress towards optimization by analyzing product lifecycle impacts and publicly committing to reductions (50% of cost or  $\frac{1}{2}$  product)
- ii. **Life Cycle Impact Reductions in Embodied Carbon:**
  - i. **5% reduction in GWP:** compared to industrywide EPD, product-specific LCA, or Type III EPD (100% of cost, or 1 products)
  - ii. **10% reduction in GWP:** compared to industrywide EPD, product-specific LCA, or Type III EPD (150% or 1.5 products)
  - iii. **20% reduction in GWP:** considered exemplary; must be compared against type III EPDs only; must also include 5%+ reduction in two additional categories (200% or 2 products)



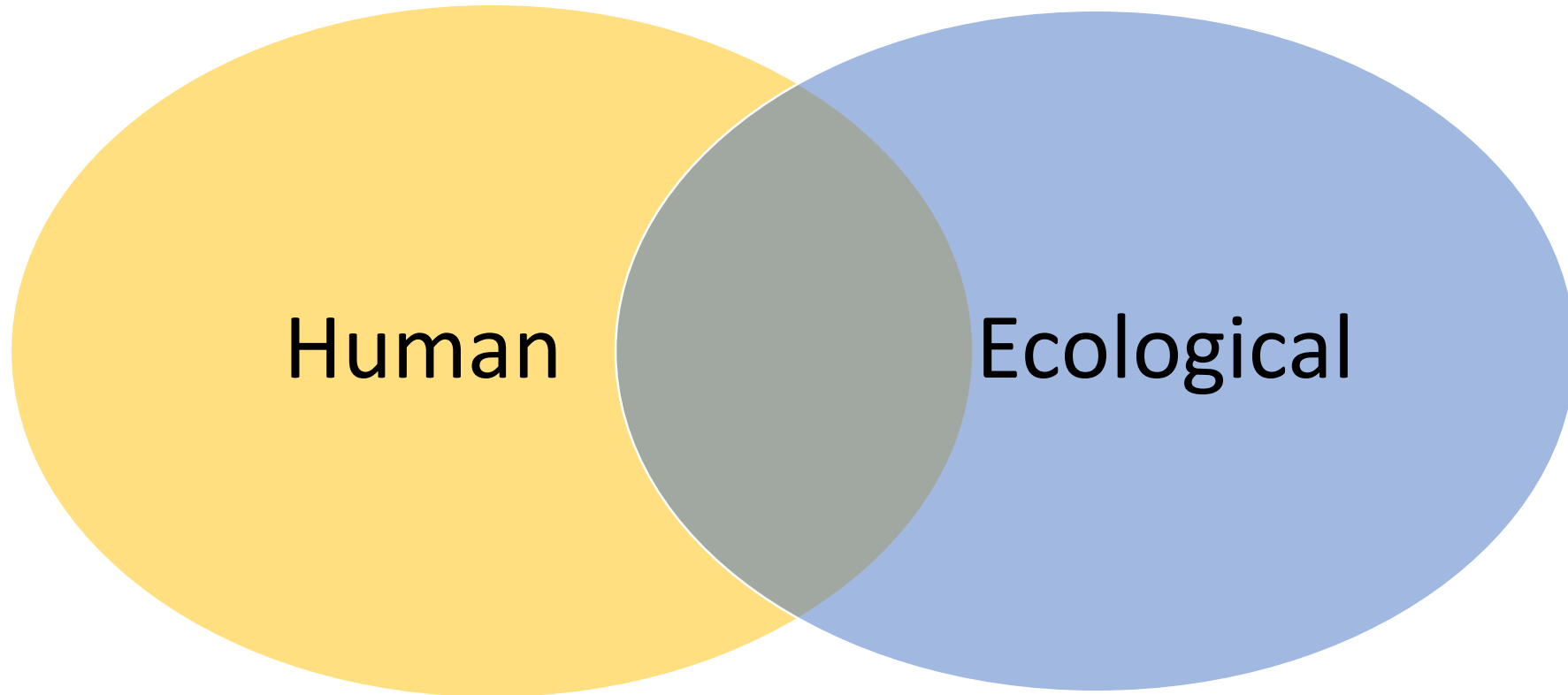




# HIGHLIGHTS

# HEALTH

# Health Impacts Of Products and LEED



Low Emitting Materials credit: Addresses most directly- impact to indoor air in the use phase

Material Ingredients credit: Addresses impacts during manufacturing process, installation, use and end of life phase



## Selected human & ecological health strategies in LEED

- PBT Source reduction
- Building life-cycle impact reduction
- Building product disclosure and optimization - EPDs
- Building product disclosure and optimization - sourcing of raw materials
- **Building product disclosure and optimization - material ingredients**
- **IEQ: Low emitting materials**





MORE ACCESSIBLE

## Building product disclosure and optimization – material ingredients

Credit

### Option 1. Material Ingredient Reporting

Choose 20 products for 1 point  
*(10 products for ID+C, Core & Shell, and Warehouse/Distribution Centers)*

*\*Third party verified disclosures count for 1.5 products*



MORE ACCESSIBLE

## Building product disclosure and optimization – material ingredients

Credit

### Option 2. Material Ingredient Optimization

Cost requirement lowered to 10%

Option for # of products (10 for all project  
types)

*New pathways reward stepwise  
progression towards leadership*



# Building product disclosure and optimization – material ingredients

## Credit

### Option 2. Material Ingredient Optimization

- i. **Action Plan:** Reward manufacturer progress towards optimization following the principles of green chemistry (50% of cost or ½ product)
- ii. **Advanced Screening & Assessment:** Avoid known hazards from most of the product (GHS Cat-1 and GS BM-1s); resolve data gaps (unknowns) and make assessments public; 3rd party verification (100% of cost, or 1 products)
- iii. **Full Assessment:** Full inventory and assessment of at least 95% of ingredients by weight; avoid known hazards and CMRs; 3rd party verification (150% or 1.5 products)







MORE ACCESSIBLE

## Building product disclosure and optimization – material ingredients

Credit

### Removed Option 3: Supply Chain Optimization

- Lack of uptake and clear pathways of compliance
- Will be refined as a Pilot Credit



## Selected human & ecological health strategies in LEED

- PBT Source reduction
- Building life-cycle impact reduction
- Building product disclosure and optimization - EPDs
- Building product disclosure and optimization - sourcing of raw materials
- Building product disclosure and optimization - material ingredients
- **IEQ: Low emitting materials**





LEED v4.1

Indoor Environmental Quality







## LOWER BARRIERS TO ENTRY

### Low-emitting materials

#### Credit

1 single, simplified building component based approach

Threshold for meeting % products lowered to encourage adoption

# Thresholds of compliance for 8 categories of products

New Product Category*	Thresholds	Emissions and content requirements
Paints and Coatings	75% for VOC emissions+100% for VOC content	VOC emissions evaluation VOC content evaluation
Adhesives and Sealants	75% for VOC emissions+100% for VOC content	VOC emissions evaluation VOC content evaluation
Flooring	90% for VOC emissions	VOC emissions evaluation
Wall panels	75% for VOC emissions	VOC emissions evaluation
Ceilings	90% for VOC emissions	VOC emissions evaluation
Insulation	75% for VOC emissions	VOC emissions evaluation
Furniture	75% for VOC emissions	VOC emissions evaluation
Composite wood	75% for VOC emissions	Formaldehyde emissions evaluation

*\*Inherently non emitting and salvaged/reused materials with VOC emissions and content testing can also be used to fulfill the requirements*

# Materials, Material Ingredients & Circularity



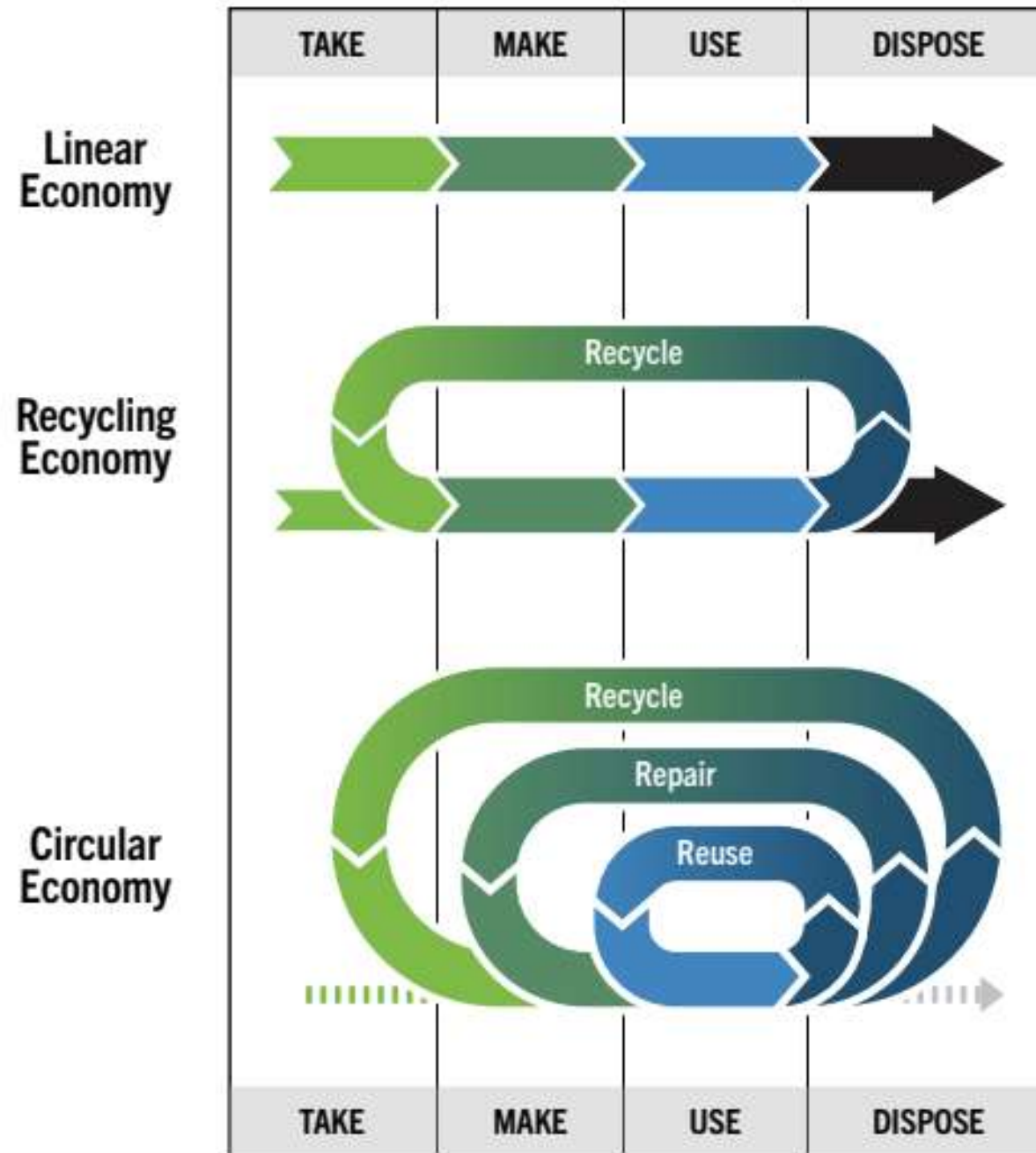
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**HIGHLIGHTS**

**CIRCULARITY**





## Strategies that promote circularity

- Storage and collection of recyclables
- Construction and demolition waste management planning
- Building life-cycle impact reduction
- Building product disclosure and optimization – EPDs
- Building product disclosure and optimization - sourcing of raw materials**
- Building product disclosure and optimization - material ingredients
- Construction and demolition waste management**





MORE ACCESSIBLE

## Building product disclosure and optimization – sourcing of raw materials

Credit

**Removed Option 1: Sourcing and  
Extraction Reporting**

- Lack of uptake and clear pathways of compliance
- Will be refined as a Pilot Credit



MORE ACCESSIBLE

## Building product disclosure and optimization – sourcing of raw materials

### Credit

Option 2 is now worth up to 2 points:  
Incremental achievement rewarded for  
selecting compliant products (all project  
types):

- 20% by cost: 1 point
- 40% by cost: 2 points





MORE ACCESSIBLE

## Building product disclosure and optimization – sourcing of raw materials

### Credit

- **Reuse now valued at 200%**
- Extended Producer Responsibility
- Recycled content
- FSC Wood
- Biobased materials





INCREASED FLEXIBILITY

## Construction and demolition waste management

Prerequisite and credit

Source reduction counts as a material  
stream

Prefabricated components

Modular design

Elimination of finishes

Design for deconstruction





INCREASED FLEXIBILITY

# Construction and demolition waste management Credit

## Option 1. Diversion

New pathways:

Allow one fewer "Material Stream" if using  
*certified commingled recycling facility*

Clarified that commingled recycling counts  
as one stream in most instances



*Photos courtesy of Zanker Recycling*



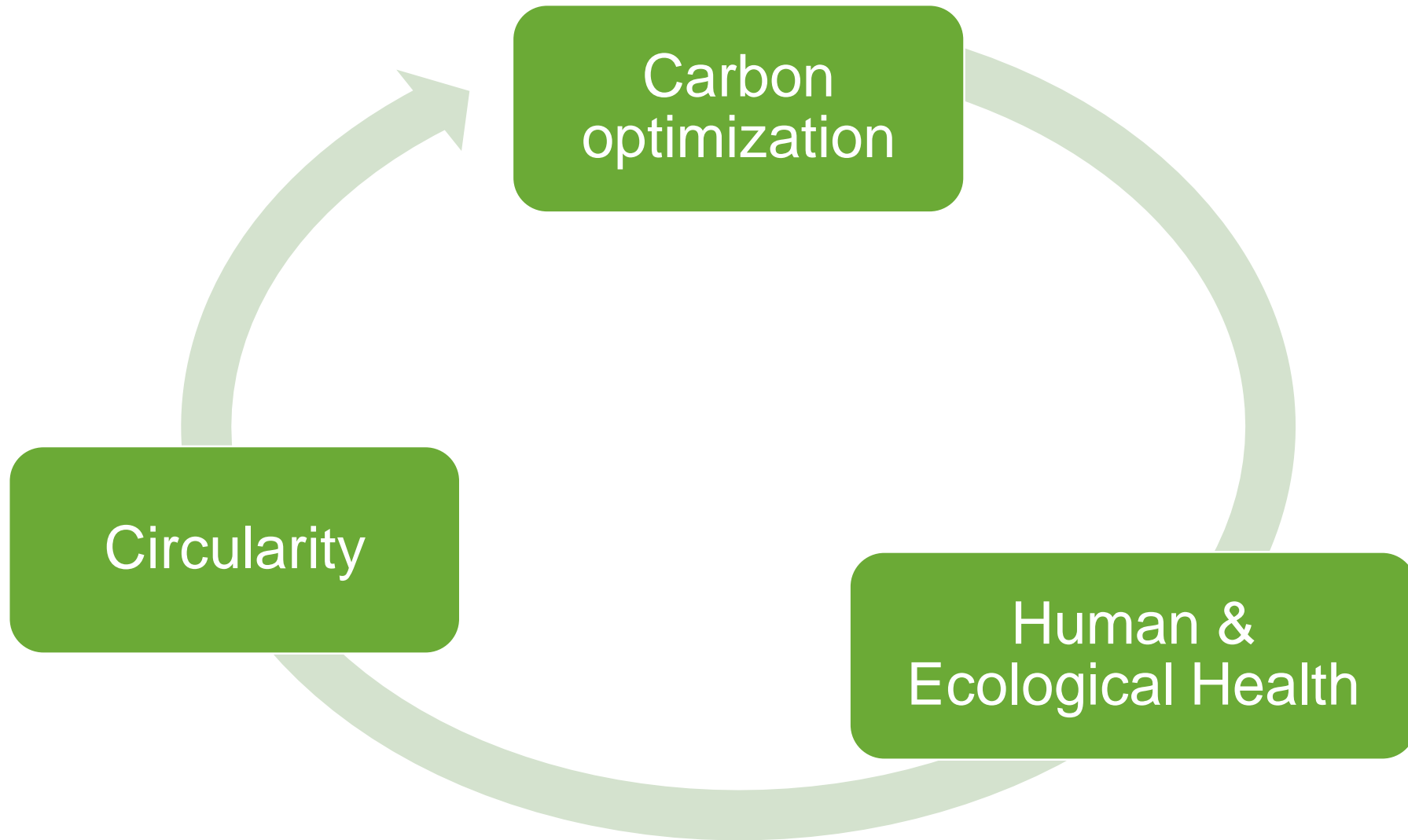
## INCREASED FLEXIBILITY

# Construction and demolition waste management

## Option 2. Reduction of Total Waste Material

Type of Waste	Building Type	Total Waste Reduction Requirements	Points Available
Renovation & Demolition Waste	All	Salvage or recycle at least 75% not including ADC	Required
New Construction Waste	All except warehouses and ID+C	Generate less than 7.5 lbs/sf	2
New Construction Waste	Warehouse and ID+C projects only	Generate less than 2.5 lbs/sf	



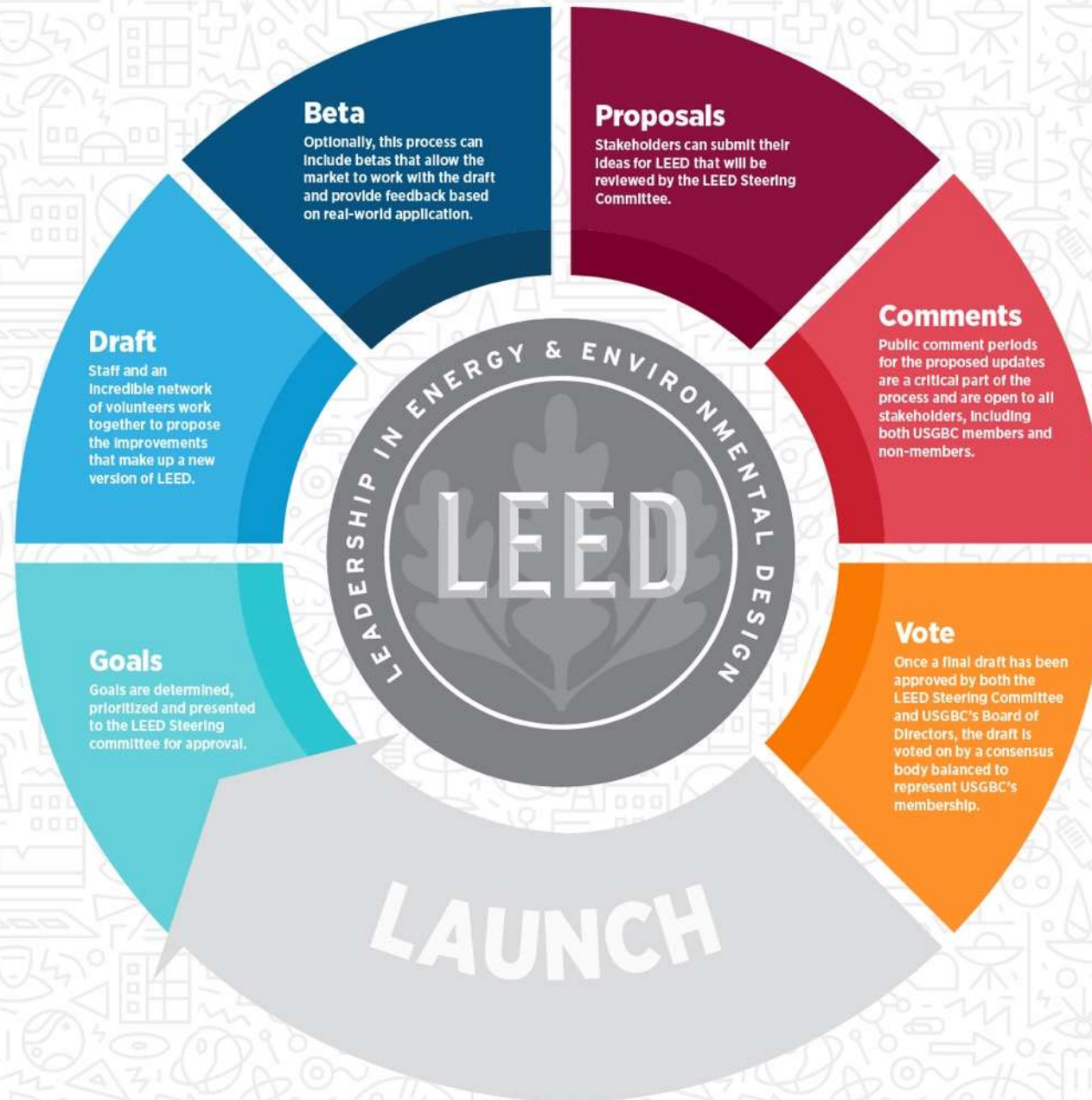




**HIGHLIGHTS**

**PILOT CREDIT LIBRARY**







- ✓ **LEED v4 Launched**  
O+M released March 2018
- ✓ **Drafts of all rating systems available:**  
Mid-December 2018
- ✓ **LEED v4.1 for BD+C:**  
Mid-January 2019: Launch of LEED v4.1 beta for BD+C
- ✓ **LEED v4.1 for ID+C:**  
Mid-January 2019: Launch of LEED v4.1 beta for ID+C

#### **LEED v4.1 Residential:**

April 2019: Launch of LEED v4.1 beta for Residential

#### **LEED v4.1 for Cities/Communities:**

April 2019: Launch of LEED v4.1 beta for Cities and Communities

#### **LEED v4.1 Public Comment, Ballot & Vote**

TBD



# Get Involved in LEED v4.1!

**Register your project**

**Substitute credits on your v4 projects**

**Submit comments**

**Advocate for LEED**

**Get educated**

**Submit articles about your experience with v4.1**



LEED

Credentials

Join

Store

Resources

Education

Directory

Articles

Account

Search the site



# LEED v4.1

## Who knew “.1” could deliver so much

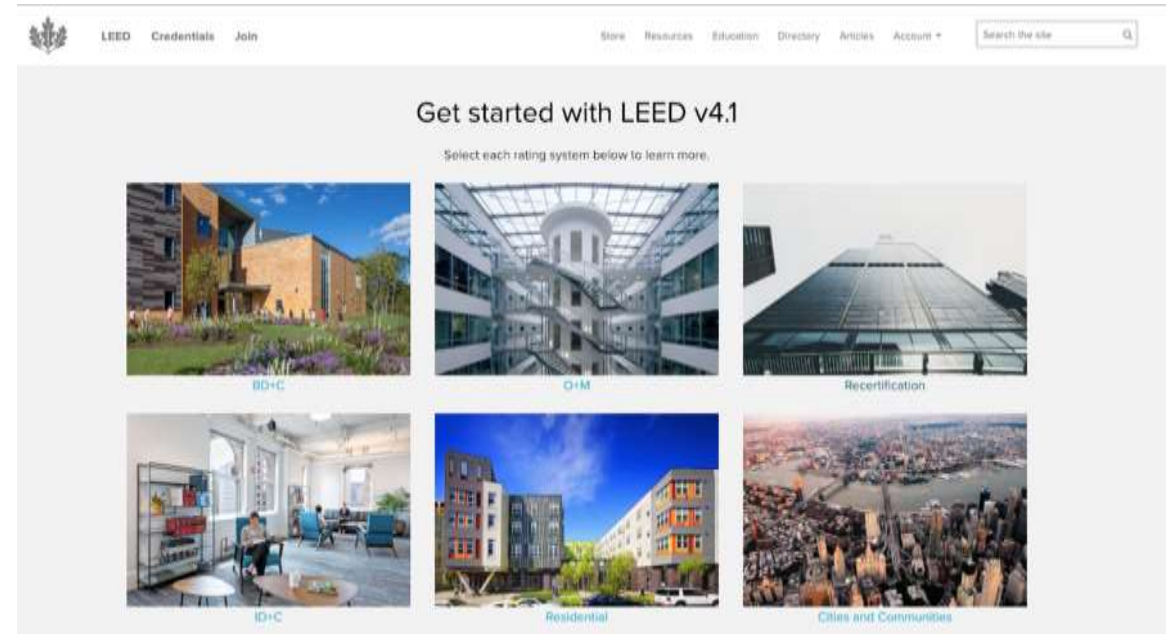
In a world that is constantly evolving, one of the hallmarks of LEED is “continuous improvement.” With each new version, LEED raises the bar to increase the impact on our built environment. From improving energy performance to emphasizing human health and integrative building design, LEED is encouraging project teams to operate beyond the status quo.

Enter LEED v4.1: LEED v4.1 will be our most inclusive and transparent platform to date. That's because our most important requirement for adoption will come from



# Resources

- Rating system language
- Tracked changes of v4 to v4.1
- “beta” reference guides
- Link to LEED credit library
- Call for proposals



# Credit Substitutions

- Open to v4 BD+C and ID+C registered projects
- All credits that changed significantly in v4.1 are available
- Must swap full credits (not options)
- No minimum or maximum number of substitutions
- A few credits have special rules (but not M&R category)
- Substitute credits via LEED Online

*Requirements can be found in the beta reference guides:*

<https://new.usgbc.org/leed-v41>


# Recertification

Available to all previous LEED certified projects

- **Step 1:** Review the [Recertification Guide](https://new.usgbc.org/leed-v41) at [new.usgbc.org/leed-v41](https://new.usgbc.org/leed-v41)
- **Step 2:** Sign in to LEED Online to activate recertification
- **Step 3:** Collect and submit the last 12 months of data across 5 performance categories
- **Step 4:** LEED Online will automatically calculate performance scores
- **Step 5:** When ready, submit to GBCI for review

- **Recertification is valid for 3 years**






ORGANIZATIONAL

Organizational benefits include:


- Promote your affiliation with the USGBC member logo & certificate
- Savings on Education @USGBC subscription, LEED AP, SITES AP, TRUE Advisor, WELL AP & Greenbuild registration
- Unlimited access to members-only resources for all of your employees
- Stay informed with Member Only Insider Updates



SILVER

All Organizational benefits plus:


- Silver badge in online member directory
- 30 hours of Education @USGBC subscription
- Savings on Greenbuild Expo space
- Three complimentary course reviews
- Savings on registration & certification for LEED, PEER, Parksmart, SITES, TRUE



GOLD

All Silver benefits plus:

- Gold badge in online member directory
- 150 hours of Education @USGBC subscription
- Savings on LEED volume
- Gold customer support services
- Specialized promotional opportunities & recognition



PLATINUM

All Gold benefits plus:

- Platinum badge in online member directory
- Unlimited access to Education @USGBC subscription
- Unlimited access to LEED v4 web-based reference guide
- Platinum customer support
- Leadership recognition among USGBC's network
- Added access for all of your employees
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# Thank You

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