LEED Green Associate
Activity #7 – Materials and Resources (MR)
Before completing this Activity Read: GA02 - Pgs. 467-472 & GA09 – Pgs. 86-106 (see lorisweb.com)

Note the following abbreviations are used in this activity:

NC	LEED BD+C: New Construction and Major Renovation
CS	LEED BD+C: Core and Shell Development
S	LEED BD+C: Schools
R	LEED BD+C: Retail
DC	LEED BD+C: Data Centers
WDC	LEED BD+C: Warehouses and Distribution Centers
HOS	LEED BD+C: Hospitality
HC	LEED BD+C: Healthcare

Although the LEED BD+C reference guide does not number the LEED prerequisites and credits, for this exercise they have been numbered in the order presented in the credit category.

Fill-In, Multiple Choice, Matching

1. Test your knowledge of how well you know the names of the credits for the Materials and Resources (MR) credit category:

LEED BD+C: NC, CS, S, R, DC, WDC, HOS, HC	
Credit	Name
P1	Storage and Collection of Recyclables
P2	Construction and Demolition Waste Management Planning
C1	Building Life-cycle Impact Reduction
C2	Building Product Disclosure and Optimization - Environmental Product Declarations
C3	Building Product Disclosure and Optimization - Sourcing of Raw materials
C4	Building Product Disclosure and Optimization - material Ingredients
C5 C9 HC	Construction and Demolition Waste Management
HC	
P3	PBT Source Reduction - Mercury
C5	PBT Source Reduction - Lead, Cadmium, and Copper
C6	PBT Source Reduction -
C7	Furniture and Medical Furnishings
C8	Design for Flexibility

2. Match the intent shown below to the prerequisite or credit:

LEED BD+C: NC, CS, S, R, DC, WDC, HOS, HC

Credit	ANS
MR – P1	D
MR – P2	H
MR – C1	F

MR – C2	B
MR – C3	I
MR – C4	A
MR – C5 & HC C9	H
HC	
MR – P3	J
MR – C5	J
MR – C6	C
MR – C7	E
MR – C8	G

	INTENT
A	To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.
B	To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products from manufacturers who have verified improved environmental life-cycle impacts.
C	To reduce the release of persistent, bioaccumulative, and toxic (PBTs) chemicals associated with the life cycle of building materials.
D	To reduce the waste that is generated by building occupants and hauled to and disposed of in landfills.
E	To enhance the environmental and human health performance attributes associated with freestanding furniture and medical furnishings.
F	To encourage adaptive reuse and optimize the environmental performance of products and materials.
G	Conserve resources associated with the construction and management of buildings by designing for flexibility and ease of future adaptation and for the service life of components and assemblies.
H	To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.
I	To encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.
J	To reduce mercury-containing products and devices and mercury release through product substitution, capture, and recycling.

3. List the preferred strategies recommended by the EPA for reducing waste:
   1. source reduction
   2. reuse
   3. recycling
   4. waste-to-energy

4. Of the four preferred strategies recommended by the EPA for reducing waste which one is at the top of the hierarchy?

   Source reduction

5. List examples of innovative construction strategies that reduce waste:
   1. prefabrication
   2. designing to dimensional construction materials

6. What are the ways that material reuse can be achieved in a LEED v4 project?
   1. in situ, as part of a building reuse strategy
   2. From off site, as part of a salvaging strategy

7. Recycling is the most common way to divert waste from landfills.

8. When strict air quality control measures are enforced, waste-to-energy can be a viable alternative to extracting fossil fuels to produce energy.

9. LCA is a "compilation and evaluation of the inputs and outputs and the potential environmental impacts of a product system throughout its life cycle."

10. List examples of the types of materials that the MR section addresses that are "permanently installed building products":
    1. structure and enclosure elements
    2. installed finishes
    3. framing
    4. interior walls
    5. cabinets and casework
    6. doors
    7. roofs

11. Furniture is not required to be included in credit calculations. However, if furniture is included in MR credit calculations, all furniture must be included consistently in all cost-based credits.

List the special equipment that is excluded from the credit calculation:

1. elevators
2. escalators
3. process equipment
4. fire suppression systems

12. Several credits in this category calculate achievement on the basis of number of products instead of product cost.

13. Product and materials cost includes all taxes and expenses to deliver the material to the project site incurred by the contractor but excludes any cost for labor and equipment required for installation after the material is delivered to the site.

14. List the methods that can be used to calculate the total materials cost of a project:
    1. actual material cost
    2. Default material cost

15. A project's total construction cost is $10,000,000. Calculate the project's total default materials cost.

Total Material Cost($) = $10,000,000 x 0.45
= $4,500,000

16. Several credits in the MR section include a location valuation factor, which adds value to locally produced products and materials. The intent is to incentivize the purchase of products that support the local economy. Products and materials that are extracted, manufactured, and purchased within 100 miles (160 kilometers) of the project are valued at 200% of their cost (i.e., the valuation factor is 2).

17. List the two conditions that must be met in order for a material to qualify for the location valuation factor:
    1. Extracted, manufactured, and purchased within 100 mile radius
    2. meets at least one of the sustainable criteria

18. The distance must be measured as the crow flies, not by actual travel distance.

19. The point of purchase is considered the location of the purchase transaction. For online or other transactions that do not occur in person, the point of purchase is considered the location of product distribution.

20. In the case of a material that is part of an assembly, how is the contributing value determined?
As the percentage, by weight, of the material, multiplied by the total cost

21. Complete the following equation:

Product value ($) = Total product cost ($) X product component by Weight X (%) meeting sustainable criteria

22. MR Prerequisite Storage and Collection of Recyclables requirements:
List the materials that must be collected:
    1. mixed paper
    2. corrugated cardboard
    3. glass
    4. plastics
    5. metals

In addition projects must, take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.

Retail

Conduct a waste stream study to identify the retail project's top five recyclable waste streams, by either weight or volume, using consistent metrics. Based on the waste stream study, list the top four waste streams for which collection and storage space will be provided. If no information is available on waste streams for the project, use data from similar operations to make projections. Retailers with existing stores of similar size and function can use historical information from their other locations.

23. MR Prerequisite Construction and Demolition Waste Management Planning requirements:
Develop and implement a construction and demolition waste management plan:
    - Establish waste diversion goals for the project by identifying at least five materials (both structural and nonstructural) targeted for diversion. Approximate a percentage of the overall project waste that these materials represent.
    - Specify whether materials will be Separated or Commingled and describe the diversion strategies planned for the project. Describe where the material will be taken and how the recycling facility will process the material.

Provide a final report detailing all major waste streams generated, including disposal and diversion rates.

Alternative daily cover (ADC) does not qualify as material diverted from disposal.

Land-clearing debris is not considered construction, demolition, or renovation waste that can contribute to waste diversion.

24. MR Prerequisite PBT Source Reduction – Mercury applies to: Healthcare

25. MR Prerequisite PBT Source Reduction – Mercury requirements:

List what must be identified for mercury-containing products:

1. types of products and device to be collected
2. criteria for handling by recycling program
3. disposal methods for captured mercury

List examples of the applicable types of mercury-containing lamps:

1. Fluorescent
2. Compact Fluorescent
3. High Intensity Discharge (HID)

List examples of the applicable types of mercury-containing dental wastes:

1. Amalgam
2. Chair side Traps
3. Separator wastes

In facilities delivering dental care, specify and install amalgam separation devices that meet or exceed the ISO- 11143 standard.

Do not specify or install preheat, T-9, T-10, or T-12 fluorescents or mercury vapor high-intensity discharge (HID) lamps in the project. Do not specify probe-start metal halide HID lamps in any interior spaces.

Specify and install illuminated exit signs that do not contain mercury and use less than 5 watts of electricity.

Fluorescent and high-pressure sodium lamps must meet the criteria in Table 1.
Complete Table 1. Maximum mercury content of lamps

Table 1. Maximum mercury content of lamps	
Lamp	**Maximum content**
T-8 fluorescent, eight-foot	10 mg mercury
T-8 fluorescent, four-foot	3.5 mg mercury
T-8 fluorescent, U-bent	6 mg mercury
T-5 fluorescent, linear	2.5 mg mercury
T-5 fluorescent, circular	9 mg mercury
Compact fluorescent, nonintegral ballast	3.5 mg mercury
Compact fluorescent, integral ballast	3.5 mg mercury, ENERGY STAR qualified
High-pressure sodium, up to 400 watts	10 mg mercury
High-pressure sodium, above 400 watts	32 mg mercury

26. Abbreviation PBT Name Persistent Bioaccumulative Toxic

27. The elemental symbol for mercury is Hg.

28. MR Credit Building Life-Cycle Impact Reduction requirements:
Demonstrate reduced environmental effects during initial project decision-making by reusing existing building resources or demonstrating a reduction in materials use through life-cycle assessment.

Achieve one of the following options.

OPTION 1. Historic Building Reuse (5 pts BD+C, 6 pts CS)
Maintain the existing building structure, envelope, and interior nonstructural elements of a historic building or contributing building in a historic district.

OR

OPTION 2. Renovation of Abandoned or Blighted Bldg (5pts BDC, 6ptCS)
Maintain at least 50%, by surface area, of the existing building structure, enclosure, and interior structural elements for buildings that meet local criteria of abandoned or are considered blight.

The building must be renovated to a state of productive occupancy.

Up to 25% of the building surface area may be excluded from credit calculation because of deterioration or damage.

OR

OPTION 3. Building and Material Reuse (2-4pts BDC, 2-5pts CS)

Reuse or salvage building materials from off site or on site as a percentage of the surface area, as listed in Table 1.

List examples of:

Structural elements	Enclosure materials	Permanently installed interior elements
1. Floors	1. Skin	1. walls
2. Roof Decking	2. Framing	2. DOORS
		3. Floor coverings
		4. Ceiling Systems

List what is excluded from the calculation:

1. Window assemblies
2. Hazardous materials

Materials contributing toward this credit may not contribute toward MR Credit Material Disclosure and Optimization.

Complete Table 1. Points for reuse of building materials

Table 1. Points for reuse of building materials

Percentage of completed project surface area	Points BD+C	Points BD+C (Core and Shell)
25%	2	2
50%	3	3
75%	4	5

OR

OPTION 4. Whole-Building Life-Cycle Assessment (3 points)

For new construction (buildings or portions of buildings), conduct a life-cycle assessment of the project's structure and enclosure that demonstrates a minimum of 10% reduction, compared with a baseline building, in at least three of the six impact categories listed below, one of which must be global warming potential. No impact category assessed as part of the life-cycle assessment may increase by more than 5% compared with the baseline building.

The baseline and proposed buildings must be of comparable size, function, orientation, and operating energy performance as defined in EA Prerequisite Minimum Energy Performance.

The service life of the baseline and proposed buildings must be the same and at least 60 years to fully account for maintenance and replacement.

Use the same life-cycle assessment Software tools and data sets to evaluate both the baseline building and the proposed building, and report all listed impact categories. Data sets must be compliant with ISO 14044.

List the impact categories for reduction:

1. global warming potential (GHG), in CO_2e
2. depletion of the stratospheric ozone layer, in kg CFC-11
3. acidification of land and water sources, in moles H^+ or kg SO_2
4. eutrophication, in kg nitrogen or kg phosphate
5. formation of tropospheric ozone, in kg NO_2 or kg ethene
6. depletion of nonrenewable energy resources, in MJ

Healthcare Only
For all options in this credit, building materials demolished to create courtyards to increase daylighting may be counted as retained in calculations, provided the new courtyards meet the requirements of EQ Credits Daylight and Quality Views.

29. MR Credit Building Product Disclosure and Optimization – Environmental Product Declarations requirements:
Achieve one or more of the options below, for a maximum of 2 points.

OPTION 1. Environment Product Declaration (1 Point)
Use at least 20 different permanently installed products sourced from at least five different manufacturers that meet one of the disclosure criteria below.

Product-specific declaration.

Requirement	Product value
LCA conforming to IOS 14044	1/4 of a product

Environmental Product Declarations which conform to ISO 14025, 14040, 14044, and EN 15804 or ISO 21930 and have at least a cradle to gate scope.

Requirement	Product value
Industry-wide (generic) EPD	1/2 of a product
Product-specific Type III EPD	1 product value

USGBC approved program – Products that comply with other USGBC approved environmental product declaration frameworks.

OPTION 2. Multi-Attribute Optimization (1 point)
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. Products will be valued as below.

Third party certified products that demonstrate impact reduction below industry average in at least three of the following categories are valued at 100% of their cost for credit achievement calculations.
global warming potential (greenhouse gases), in CO2e;
depletion of the stratospheric ozone layer, in kg CFC-11;

acidification of land and water sources, in moles H+ or kg SO2;
eutrophication, in kg nitrogen or kg phosphate;
formation of tropospheric ozone, in kg NOx or kg ethene; and
depletion of nonrenewable energy resources, in MJ.

USGBC approved program -- Products that comply with other USGBC approved multi-attribute frameworks.

For credit achievement calculation, products sourced (extracted, manufactured, purchased) within 100 miles (160 km) of the project site are valued at 200 of their base contributing cost.

Structure and enclosure materials may not constitute more than 30% of the value of compliant building products.

30. Match the definition to the term using the letter shown:

A cradle-to-gate assessment

B life-cycle assessment

A	analysis of a product's partial life cycle, from resource extraction (cradle) to the factory gate (before it is transported for distribution and sale). It omits the use and the disposal phases of the product.
B	an evaluation of the environmental effects of a product from cradle to grave, as defined by ISO 14040–2006 and ISO 14044–2006

31. MR Credit Building Product Disclosure and Optimization – Sourcing of Raw Materials requirements:
Option 1. Raw Material Source and Extraction Reporting (1 point)
Use at least 20 different permanently installed products from at least five different manufacturers that have publicly released a report from their raw material suppliers which include raw material supplier extraction locations, a commitment to long-term ecologically responsible land use, a commitment to reducing environmental harms from extraction and/or manufacturing processes, and a commitment to meeting applicable standards or programs voluntarily that address responsible sourcing criteria.

Products sourced from manufacturers with self-declared reports are valued as one half (½) of a product for credit achievement.

Third-party verified corporate sustainability reports (CSR) which include environmental impacts of extraction operations and activities associated with the manufacturer's product and the product's supply chain, are valued as one whole product for credit achievement calculation. Acceptable CSR frameworks include the following:
Global Reporting Initiative (GRI) Sustainability Report
Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises
U.N. Global Compact: Communication of Progress
ISO 26000: 2010 Guidance on Social Responsibility
USGBC approved program: Other USGBC approved programs meeting the CSR criteria.

Option 2. Leadership Extraction Practices (1 point)
Use products that meet at least one of the responsible extraction criteria below for at least 25%, by cost, of the total value of permanently installed building products in the project.

Complete the table:

Product	Standard	Product value, based on cost
Purchased from a manufacturer	Participates in an Extended producer responsibility program	50%
Bio-based materials	Sustainable Agriculture Network's Sustainable Agriculture Standard	100%
Wood products	Forest Stewardship Council or USGBC-approved equivalent	100%
Materials reuse	salvaged, refurbished, or reused products	100%
Recycled content *	ISO 14021–1999, Environmental Labels and Declarations, Self-Declared Environmental Claims (Type II Environmental Labeling).	100%
USGBC approved program		

* Recycled content is the sum of postconsumer recycled content plus one-half the preconsumer recycled content, based on cost.

Products sourced (extracted, manufactured, purchased) within 100 miles of the project site are valued at 200% of their base contributing cost.

For credit achievement calculation,
the base contributing cost of individual products compliant with multiple responsible extraction criteria is not permitted to exceed 100% its total actual cost (before regional multipliers) and double counting of single product components compliant with multiple responsible extraction criteria is not permitted and in no case is a product permitted to contribute more than 200% of its total actual cost.

Structure and enclosure materials may not constitute more than 30% of the value of compliant building products.

32. MR Credit Building Product Disclosure and Optimization – Material Ingredients requirements:
Option 1. Material Ingredient Reporting (1 point)
Use at least 20 different permanently installed products from at least five different manufacturers that use any of the following programs to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).

List the programs that can be used to demonstrate compliance:

1. manufacturer inventory
2. Health Product Declaration
3. Cradle to Cradle
4. USGBC Approved Program

AND/OR
Option 2. Material Ingredient Optimization (1 Point)
Use products that document their material ingredient optimization using the paths below for at least 25%, by cost, of the total value of permanently installed products in the project.

Complete the Table:

Path	Value product at
GreenScreen v1.2 Benchmark. Products that have fully inventoried chemical ingredients to 100 ppm that have no Benchmark 1 hazards:	
If any ingredients are assessed with the GreenScreen List Translator	100%
If all ingredients are have undergone a full GreenScreen Assessment	150%
Cradle to Cradle Certified. End use products are certified Cradle to Cradle. Products will be valued as follows:	
Cradle to Cradle v2 Gold	100%
Cradle to Cradle v2 Platinum	150%
Cradle to Cradle v3 Silver	100%
Cradle to Cradle v3 Gold or Platinum	150%
International Alternative Compliance Path – REACH Optimization. End use products and materials that do not contain substances that meet REACH criteria for substances of very high concern.	
If the product contains no ingredients listed on the REACH Authorization or Candidate list	100%
USGBC approved program. Products that comply with USGBC approved building product optimization criteria.	

AND/OR

Option 3. Product Manufacturer Supply Chain Optimization (1 Point)
Use building products for at least 25% , by cost, of the total value of permanently installed products in the project that:
Are sourced from product manufacturers who engage in validated and robust safety, health, hazard, and risk programs which at a minimum document at least 99% (by weight) of the ingredients used to make the building product or building material, and
Are sourced from product manufacturers with independent third party verification of their supply chain that at a minimum verifies:
Processes are in place to:
Communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure and use information to identify those that require more detailed evaluation
Identify, document, and communicate information on health, safety and environmental characteristics of chemical ingredients
Implement measures to manage the health, safety and environmental hazard and risk of chemical ingredients
Optimize health, safety and environmental impacts when designing and improving chemical ingredients
Communicate, receive and evaluate chemical ingredient safety and stewardship information along the supply chain

Safety and stewardship information about the chemical ingredients is publicly available from all points along the supply chain

Products meeting Option 3 criteria are valued at 100 % of their cost for the purposes of credit achievement calculation.

For credit achievement calculation of options 2 and 3, products sourced (extracted, manufactured, purchased) within 100 miles (160 km) of the project site are valued at 200 % of their base contributing cost.

For credit achievement calculation, the value of individual products compliant with either option 2 or 3 can be combined to reach the 25 % threshold but products compliant with both option 2 and 3 may only be counted once.

Structure and enclosure materials may not constitute more than 30 % of the value of compliant building products.

33. MR Credit PBT Source Reduction – Mercury applies to: Healthcare

34. MR Credit PBT Source Reduction – Mercury requirements:
Specify and install fluorescent lamps with both low mercury content (MR Prerequisite PBT Source Reduction—Mercury) and long lamp life, as listed in Table 1.

Complete Table 1. Criteria for rated life of low-mercury lamps

Table 1. Criteria for rated life of low-mercury lamps

Lamp	Maximum content	Lamp life (hrs)
T-8 fluorescent, eight-foot	10 mg mercury	Standard output - 24,000 rated hours on instant start ballasts (3-hour starts) High output – 18,000 rated hours on instant start ballasts or program start ballasts (3-hour starts)
T-8 fluorescent, four-foot	3.5 mg mercury	Both standard and high output - 30,000 rated hours on instant start ballasts, or 36,000 rated hours on program start ballasts (3 hour starts)
T-8 fluorescent, two-foot and three-foot	3.5 mg mercury	24,000 rated hours on instant start ballasts or program start ballasts (3-hour starts)
T-8 fluorescent, U-bent	6 mg mercury	18,000 rated hours on instant start ballasts, or 24,000 rated hours on program start ballasts (3-hour starts)
T-5 fluorescent, linear	2.5 mg mercury	Both standard and high-output - 25,000 rated hours on program start ballasts
Compact fluorescent, nonintegral ballast	3.5 mg mercury	12,000 rated hours
Compact fluorescent, integral ballast	3.5 mg mercury, Energy STAR qualified	Bare bulb - 10,000 rated hours Covered models such as globes, reflectors, A-19s – 8,000 hours
High-pressure sodium, up to 400 watts	10 mg mercury	Use noncycling type or replace with LED lamps or induction lamps
High-pressure sodium, above 400 watts	32 mg mercury	Use noncycling type or replace with LED lamps or induction lamps

Do not specify or install circular fluorescent lamps or probe start metal halide lamps.

35. MR Credit PBT Source Reduction – Lead, Cadmium, and Copper applies to: Healthcare

36. MR Credit PBT Source Reduction – Lead, Cadmium, and Copper requirements:
Specify substitutes for materials manufactured with lead and cadmium, as follows.

Lead

For water intended for human consumption, specify and use solder and flux to connect plumbing pipe on site that meets the California AB1953 standard, which specifies that solder not contain more than 0.2% lead, and flux not more than a weighted average of 0.25% lead for wetted surfaces. The "lead free" label as defined by the Safe Drinking Water Act (SDWA) does not provide adequate screening for the purposes of this credit because the SDWA defines "lead free" as solders and flux containing 0.2% lead or less.

For water intended for human consumption, specify and use pipes, pipe fittings, plumbing fittings, and faucets that meet the California law AB1953 of a weighted average lead content of the wetted surface area of not more than 0.25% lead.

Specify and use lead-free roofing and flashing.

Specify and use electrical wire and cable with lead content less than 300 parts per million.

Specify no use of interior or exterior paints containing lead.

For renovation projects, ensure the removal and appropriate disposal of disconnected wires with lead stabilizers, consistent with the 2002 National Electric Code requirements.

Lead used for radiation shielding and copper used for MRI shielding are exempt.

Cadmium

Specify no use of interior or exterior paints containing intentionally added cadmium.

Copper

For copper pipe applications, reduce or eliminate joint-related sources of copper corrosion:
use mechanically crimped copper joint systems; or
specify that all solder joints comply with ASTM B828 2002, and specify and use ASTM B813 2010 for flux.

37. MR Credit Furniture and Medical Furnishings applies to: Healthcare

38. MR Credit Furniture and Medical Furnishings requirements:
Complete the table:

Percentage, by cost	Points
30%	1
40%	2

List examples of freestanding furniture and medical furnishings that must be included:

1. mattresses
2. foams
3. panel fabrics
4. cubicle curtains
5. window coverings
6. other textiles

List what must be included in the base building calculations, even if manufactured off site:

1. built-in casework
2. built-in millwork

Option 1. Minimal Chemical Content

All components that constitute at least 5%, by weight, of a furniture or medical furnishing assembly, including textiles, finishes, and dyes, must contain less than 99% parts per million (ppm) of at least four of the five following chemical groups:

urea formaldehyde;

heavy metals, including mercury, cadmium, lead, and antimony;

hexavalent chromium in plated finishes consistent with the European Union Directive on the Restriction of the Use of Certain Hazardous Substances (EU RoHS);

Stain and nonstick treatments derived from perfluorinated compounds (PFCs), including perfluorooctanoic acid (PFOA); and

added antimicrobial treatments.

Option 2. Testing and Modeling of Chemical Content

All components of a furniture or medical furnishing assembly, including textiles, finishes, and dyes, must contain less than 100 parts per million (ppm) of at least two of the five chemicals or materials listed in Option 1.

New furniture or medical furnishing assemblies must be in accordance with ANSI / BIFMA e3-2010 Furniture Sustainability Standard.

Salvaged and reused furniture more than one year old at the time of use is considered compliant, provided it meets the requirements for any site-applied paints, coatings, adhesives, and sealants.

Option 3. Multi-Attribute Assessment of Products

Use products that meet at least one of the criteria below. Each product can receive credit for each criterion met. The scope of any environmental product declaration (EPD) must be at least cradle to gate.

Complete the tables:

Product-specific declaration.

Criteria	Criterion valuation factor
publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope	0.25

Environmental Product Declarations which conform to ISO 14025, 14040, 14044, and EN 15804 or ISO 21930 and have at least a cradle to gate scope.

Criteria	Criterion valuation factor
Industry-wide (generic) EPD -- Products with third-party certification (Type III)	0.5
Product-specific Type III EPD -- Products with third-party certification (Type III)	1.0

Materials reuse	
Postconsumer recycled content	1.0
Preconsumer recycled content	0.5
Extended producer responsibility	0.5
Biobased nonwood (Sustainable Agriculture Standard)	1.0
New wood (FSC standards)	1.0

For credit achievement calculation, products sourced (extracted, manufactured, purchased) within 100 miles of the project site are valued at 200% of their base contributing cost.

39. MR Credit Design for Flexibility applies to: Healthcare

40. MR Credit Design for Flexibility requirements:

Increase building flexibility and ease of adaptive use over the life of the structure by employing at least three of the following strategies.

Use interstitial space. Design distribution zone utility systems and equipment including HVAC, plumbing, electrical, information technology, medical gases, and life safety systems to serve the occupied zones and have the capacity to control multiple zones in clinical spaces.

Provide programmed soft space, such as administration or storage, equal to at least 5% of departmental gross area (DGA). Locate soft space adjacent to clinical departments that anticipate growth. Determine a strategy for future accommodation of displaced soft space.

Provide shell space equal to at least 5% of DGA. Locate it such that it can be occupied without displacing occupied space.

Identify horizontal expansion capacity for diagnostic and treatment or other clinical space equal to at least 30% of existing floor area (excluding inpatient units) without demolition of occupied space (other than at the connection point). Reconfiguration of additional existing occupied space that has been constructed with demountable partition systems is permitted.

Design for future vertical expansion on at least 75% of the roof, ensuring that existing operations and service systems can continue at or near capacity during the expansion.

Designate space for future above-grade parking structures equal to 50% of existing on-grade parking capacity, with direct access to the main hospital lobby or circulation. Vertical transportation pathways that lead directly to the main hospital lobby or circulation are acceptable.

Use demountable partitions for 50% of applicable areas.

Use movable or modular casework for at least 50% of casework and custom millwork. Base the calculation on the combined value of casework and millwork, as determined by the cost estimator or contractor.

41. MR Credit Construction and Demolition Waste Management requirements:
Recycle and/or salvage nonhazardous construction and demolition materials.

Calculations can be by weight or volume but must be consistent throughout.

List the material that must be excluded:

1. excavated soil
2. land-clearing debris
3. Alternative Daily cover (ADC)

Include wood waste converted to fuel (biofuel) in the calculations; other types of waste-to-energy are not considered diversion for this credit.

Option 1. Diversion (1–2 points)

Path	Points
1. Divert 50% and three Material Streams	1
2. Divert 75% and four Material Streams	2

OR

Option 2. Reduction of Total Waste Material (2 points)
Do not generate more than 2.5 pounds of construction waste per square foot of the building's floor area.