

LEED Pilot Credit Resource

Procurement of Low Carbon Construction Materials

This document provides step by step guidance and a project example for LEED project teams using the Procurement of Low Carbon Construction Materials Pilot Credit.

REQUIREMENT	DATA SOURCE/PROCESS
List the material embodied carbon intensity baseline (mECIb)	<p>Defined by UW/CLF as the “High Baseline” on page 3 of this document: https://crm.carbonleadershipforum.info/sites/default/files/CLF-EC-Baselines-Beta-2019.11.19.pdf</p> <p>Must include the following materials (in unit) if present on the project: Concrete, Steel, Timber, Metal Framing, Glazing, Gypsum Board, Insulation, Carpet, Ceiling Tiles <i>Other materials may be included at the discretion of the project team.</i></p>
Calculate the building Embodied Carbon Intensity Baseline (bECIb)	<p>Multiply the materials ECI baseline (mECIb) by the total quantity of each material used in the construction of the project. Add these together, then divide by project GSF to calculate the building ECI baseline (bECIb).</p> $(mECIb \times material\ quantity) / GSF = bECIb$ <p><i>Material quantities must be consistently drawn from either the 100% CD Construction Estimate, 100% CD BIM bill of materials, or Contractor procurement data.</i></p>
List the material embodied carbon intensity actual (mECIa)	<p>When a procured product has a third party verified product specific EPD (PS EPD), use carbon value published in EC3. <i>Values in EC3 have had UW/CLF comparability methodology applied, which is required for this Pilot Credit.</i></p> <p>If the procured product in a credit material category does not have a PS EPD, then the CLF High Baseline must be used and documentation of advocacy to manufacturers asking for PS EPDs must be submitted.</p>
Calculate the building Embodied Carbon Intensity actual (bECIa)	<p>Multiply the materials ECI actual (mECIa) by the total quantity of each material used in the construction of the project. Add these together, then divide by project GSF to calculate the building ECI actual (bECIa).</p> $(mECIa \times material\ quantity) / GSF = bECIa$ <p><i>Material quantities must be consistently drawn from either the 100% CD Construction Estimate, 100% CD BIM bill of materials, or Contractor procurement data. Quantities between baseline and actual building should be the same for same materials.</i></p>



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Calculate the project embodied carbon reduction through Procurement

Building Actual (bECI_a) / Building Baseline (bECI_b) = XX%
Then, 100% - XX% = **XX% Project Embodied Carbon Reduction from procurement of products with PS EPDs**

Required Documentation:

- **Reduction Calculation:** Calculator of ECI values and % reduction.
- **Material Quantities Source:** 100% CD estimate, exported BIM material quantities bill of materials, OR as-procured material quantities.
- **Material Embodied Carbon Intensities:** Third Party Verified Product Specific EPDs with UW/CLF comparability methodology applied to address EPD variability and lack of transparency, unless EC3 used.
- **Advocacy to Manufacturers for Product Specific EPDs:** For all products included in material categories of this credit, when Product Specific EPDs are unavailable, provide documentation of advocacy to manufacturers asking for Product Specific EPDs.

LEED Pilot Credit & Example Project

The following table demonstrates how the project would perform based on which option USGBC select for claiming project embodied carbon reductions.

Example Project Results

GSF	15,550 SF
bECI _b	1,039,810 kgCO ₂ e
bECI _a	1,036,206 kgCO ₂ e
bECI _b /SF	66.87 kgCO ₂ e/sq ft
bECI _a /SF	66.64 kgCO ₂ e/sq ft
bECI _a / bECI _b	99.65%
Project Embodied Carbon Reduction Through Procurement	0.35%
LEED Innovation point earned (out of 2 possible)	1 pt



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Baseline Calculation (all rounded to two decimal places)

Material Category	Material ECI Baseline (mECIb)	unit	Conversions	Project quantity	unit	mECIb X quantities	
Concrete – all	600	m3	736 cy = 562.71 m3	562.71	m3	337,626.00	kgCO2e
Steel – Rebar	2	kg	58,387 lbs = 26,483.9 kg	26,483.90	kg	52,967.80	kgCO2e
Steel – Plate	3	kg	17,751 lbs = 8,051.72 kg	8,051.72	kg	24,155.16	kgCO2e
Steel – Structural	2.5	kg	52,542 lbs = 23,832.65 kg	23,832.65	kg	59,581.63	kgCO2e
Steel – Cold Formed Steel	3	kg	77,554 lbs = 35,177.9 kg	35,177.90	kg	105,533.70	kgCO2e
Wood – Dimensional Lumber	100	m3	None	0	m3	0.00	kgCO2e
Wood – GLB/LVL/PSL/CLT	400	m3	18,987 cf = 537.65 m3	537.65	m3	215,060.00	kgCO2e
Wood – I Joist	6	m	None	0	m	0.00	kgCO2e
Wood – Ply/OSB	400	m3		0	m3	0.00	kgCO2e
Aluminum – Cast ingot (framing)	18	kg	11,374 lbs = 5,159.16 kg	5,159.16	kg	92,864.88	kgCO2e
Glazing – Glass	3.5	kg	16,595.25 lbs = 7527.48 kg	7527.48	kg	26,346.18	kgCO2e
Gypsum	4500	1000m2	53,704 sf = 4,989.27 m2	4,989.27	1000m2	22,451.72	kgCO2e
Insulation – Board	100	m2Rsi	6,086 sf = 565.41 m2	565.41	m2Rsi	56,541.00	kgCO2e
Insulation – Blanket	8	m2Rsi	40,271 sf = 3741.3 m2	3741.3	m2Rsi	29,930.40	kgCO2e
Insulation – Foamed In Place	60	m2Rsi	None	0	m2Rsi	0.00	kgCO2e
Insulation – Blown	8	m2Rsi	None	0	m2Rsi	0.00	kgCO2e
Carpet	35	m2	4,094 sf = 380.35 m2	380.35	m2	13,312.25	kgCO2e
Ceiling Tiles	30	m2	1,234 sf = 114.64 m2	114.64	m2	3,439.20	kgCO2e
Total mECIb x quantities summed						1,039,809.91	kgCO2e
Above total / Project GSF = Building ECI Baseline						66.87	bECI baseline



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Actual Calculations

Material Category	Actual Product Purchased	EPD?	Material ECI Actual*	unit	Conversions	Project quantity	unit	mECI x quantities
Concrete – all	Slab on Grade - Central Concrete Mix QE5118E2	IW EPD	Baseline	m3		562.71	m3	337,626.00
	Footings - Central Concrete Mix 3FAZ56Z1	IW EPD	Baseline	m3				
	Backfill - Central Concrete Mix F0G100K7	IW EPD	Baseline	m3				
Steel – Rebar	Concord Iron Works	IW EPD	Baseline	kg		26,483.90	kg	52,967.80
Steel – Plate	Concord Iron Works	IW EPD	Baseline	kg		8,051.72	kg	24,155.16
Steel – Structural	Concord Iron Works	IW EPD	Baseline	kg		23,832.65	kg	59,581.63
Steel – Cold Formed	Concord Iron Works	No	Baseline	kg		35,177.90	kg	105,533.70
Wood – Dimension Lumber						0		
Wood – GLB/LVL/PSL/CLT	Structurlam CLT	No	Baseline	m3		537.65	m3	215,060.00
	Structurlam GLB			m3				
Wood – Ply/OSB						0		
Aluminum – Cast ingot (framing)	Clark Deltrich	No	Baseline	kg		5,159.16	kg	92,864.88
	CEMCO							
Glazing – Glass	Garbaldi & Glassfab	No	Baseline	kg		7527.48	kg	26,346.18
Gypsum	National Gold Bond Fire Shield Gypsum	No	Baseline	1000m2				
	GP DensGlass FireGuard Sheathing 5/8"							
	USG Durock Cement Board with Edge Guard	IW EPD						
Insulation – Board	Rockwool Comfortboard 110	IW EPD	Baseline	m2		4200	sf	56,541.00
	Fiberglass Colombia SA Acoustical Board	No		m2	1,896 sf = 175.22 m2	175.22	m2	0.00
Insulation – Blanket	Johns Manville Mineral Wool TempControl Batts	No	Baseline	m2		565.41	m2	29,930.40
	Johns Manville Mineral Wool SAFB	No						
Carpet	Couristan Broadloom	No	35	m2	1,316 sf = 122.26 m2	122.26	m2	4,279.10
	Bentley Night Vision Carpet Tile w/ NextStep Backing	PS EPD	2.35	sf		625	sf	1,468.75
	Bentley Outlier Carpet Tile w/ NextStep Backing	PS EPD	2.35	sf		1,857	sf	4,363.95
	Mohawk State of Mind II Carpet Tile w/ EcoFlex NXT	PS EPD	1.66	sf		296	sf	491.36
Ceiling Tiles	Armstrong Kitchen Zone 673	No	30	m2	741 sf = 68.84 m2	68.84	m2	2,065.20
	Armstrong Optima PB	PS EPD	0.972	sf		493	sf	479.20
Total mECI x quantities summed								1,036,206.02
Above total / Project GSF = Building ECI Actual								66.64



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