



NRMCA CONCRETE INNOVATIONS SERIES

## Who are we?

**Lehigh Hanson**  
HEIDELBERGCEMENT Group

Is Transitioning To

**Heidelberg Materials**

In January 2023

**Hanson** **INLAND** **LEHIGH** **SHERMAN INDUSTRIES LLC** **FRM** **CCM CAMPBELL**  
**ABC CONCRETE** **OCEAN** **CADMAN** **OK READY MIX** **MAYCO MIX** **REMPER Concrete** **CORLISS RESOURCES**

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## Heidelberg Cement Group's 2030 Commitments



**Ensuring Compliance and Creating Transparency**



**Being a Good Neighbour**



**Enabling the Circular Economy**



**Reducing our Environmental Footprint**

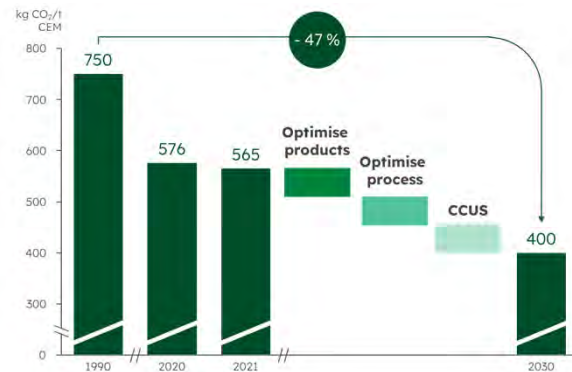


**Achieving Excellence in Occupational Health and Safety**



**Driving Economic Strength and Innovation**

### Heidelberg's CO2 Targets - Cement



Our CO<sub>2</sub> targets are underpinned by a clear roadmap. Each country in our portfolio has a detailed bottom-up carbon roadmap, with all measures agreed with local management at plant level.

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## SUSTAINABILITY EVOLUTION WITH ECOCEM SOLUTIONS

### What is driving the urgency and action in sustainability evolution?



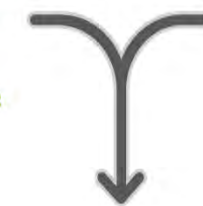
**United Nations**  
Climate Change

- Climate Change
  - Intergovernmental Panel on Climate Change
  - Paris Agreement
  - Pan-Canadian Framework on Clean Growth and Climate Change
- Green Building Councils
- Corporate commitments to target reductions
  - Shareholder concern for ESG factors is pressuring corporations to increase sustainability efforts

#### Compliance Pathways



#### Voluntary Pathways

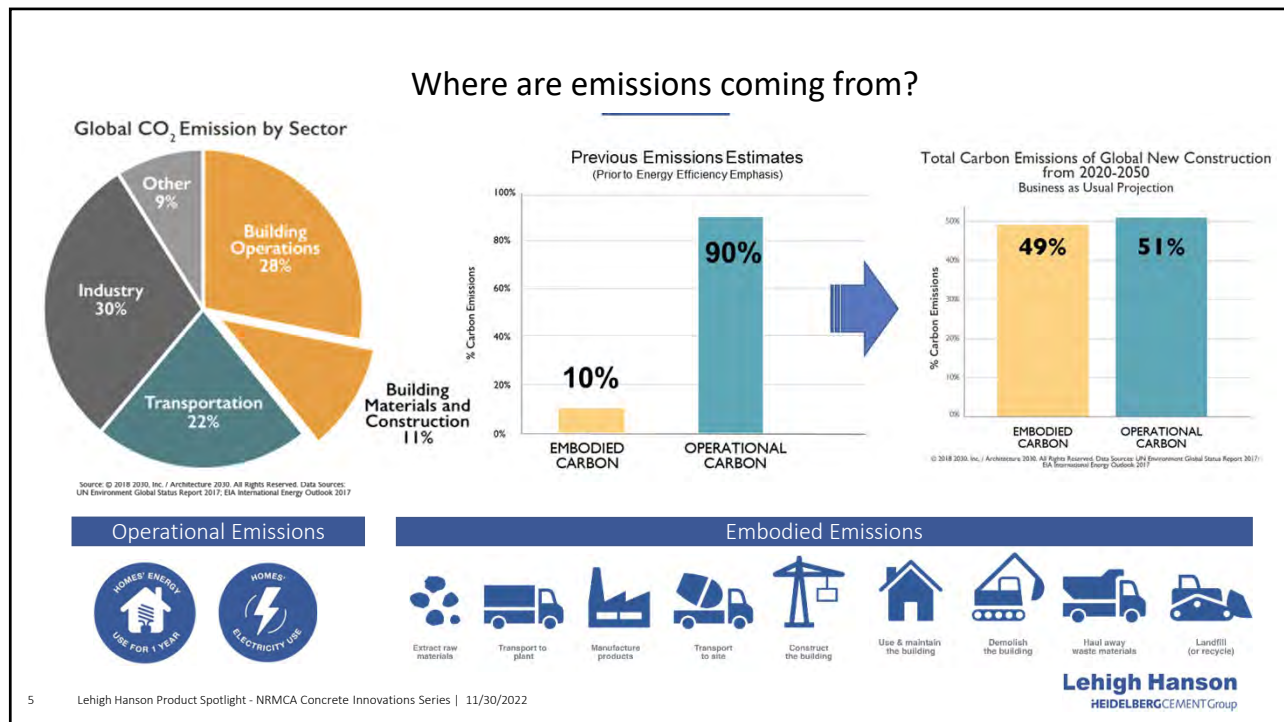


#### Enforcement Criteria



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### SUSTAINABILITY OVERVIEW

## What about Concrete?

**EMISSION-FREE, QUIET LIVING ENVIRONMENT**

Concrete walls and floors don't harbor toxic mold growth or emit harmful chemicals. They also dampen sound, which contributes to a quiet living environment - particularly important for residential buildings.

**LOW MAINTENANCE**

Concrete is dimensionally stable in all environments, maintaining a finish resistant to damage from direct exposure to fire, rain, hail, UV rays, airborne pollutants and weathering conditions associated with our harshest environments.

**COST EFFECTIVENESS**

Concrete structures offer a level of serviceability over other materials that reduces the cost of ownership over the lifecycle, including the cost of bringing structures back into use after a major disruption.

**RESILIENCE**

Concrete is resilient in the harshest of environmental conditions. It is sufficiently strong to resist impacts, strong winds, blasts and natural catastrophes like earthquakes, tornadoes and floods.

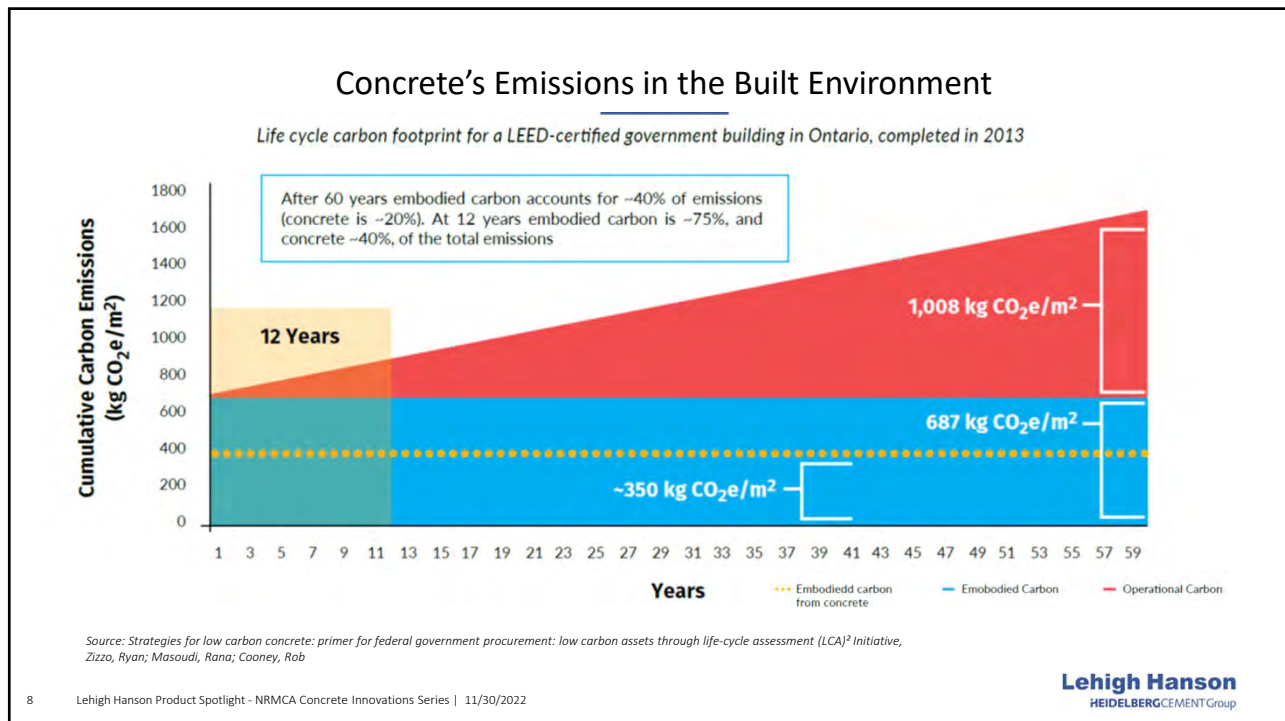
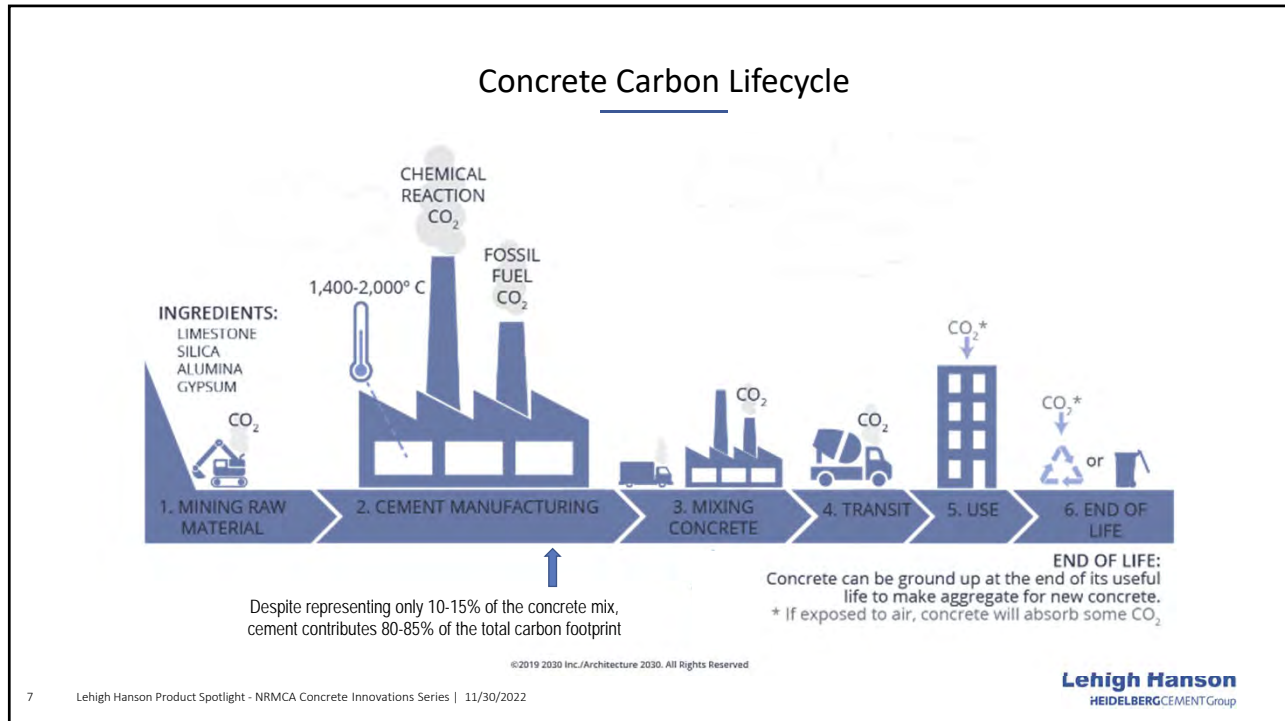
Cement Association of Canada. <https://www.cement.ca/>

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### Measurement through whole building Lifecycle Assessments (wbLCA)

**Whole Life Carbon**

**Embodied Carbon**

**Upfront Carbon**

**Operational Carbon**

**End of Life Carbon**

**Beyond the Life-cycle**

**Use Stage Embodied Carbon**

**Out of Scope**

**Supplementary information beyond the building life cycle**

**One Click LCA**

**Athena Impact Estimator for Buildings**

**tally**

**EC3**

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### The objective: lower carbon concrete

### What can specifiers do?

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## How can specifiers help? Strategies for Low Carbon Concrete



1. Consider performance-based design requirements
2. Material efficiency
3. Use Portland-limestone cement – also called “general-use limestone” (referred to as GUL and/or PLC).
4. Maximize the use of supplementary cementing materials (SCMs), alternative cementitious materials or blended cements.
5. Maximize recycled content in reinforcing steel (rebar).
6. Adjust testing age
7. Aggregate optimization and gradation.
8. Use of water reducing admixtures.

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## Converting GWP Targets to Carbon Budgets

Application	Strength (MPa)	Exposure Class	Maximum GWP (kg CO <sub>2</sub> e/m <sup>3</sup> )	Bonus Maximum GWP (kg CO <sub>2</sub> e/m <sup>3</sup> )	Volume (m <sup>3</sup> )	Total GWP (kg CO <sub>2</sub> e)
Footings	25	N	256	200	500	128,000
Floors and Slabs	30	N	305	255	1,000	305,000
Columns	35	N	355	280	600	213,000
Exterior Concrete	32	C2	362	305	300	108,600
					<b>TOTAL</b>	<b>754,600</b>

**DON'T** enforce limits at the individual mix level.

Consider incentivizing producers that can deliver exceptional embodied carbon reduction as part of the tender process with a second maximum GWP target set

**DO** enforce limits at the project total level.

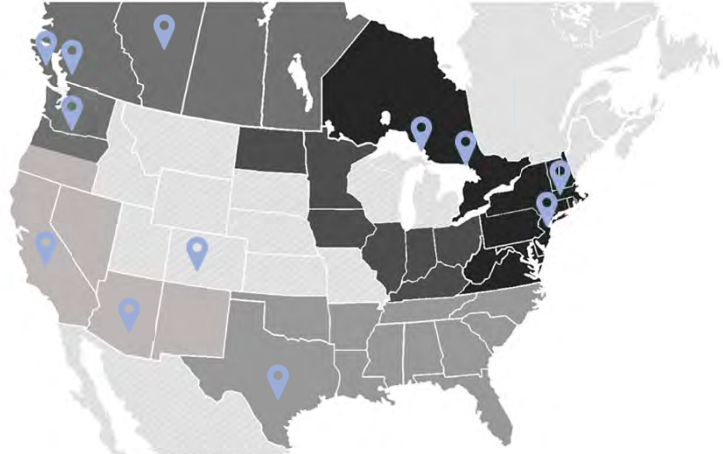
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## Performance-Based Procurement

Jurisdictions that have implemented (or are planning to implement) a performance-based specification or procurement policy for low carbon concrete that are supported by the use of EPDs include:

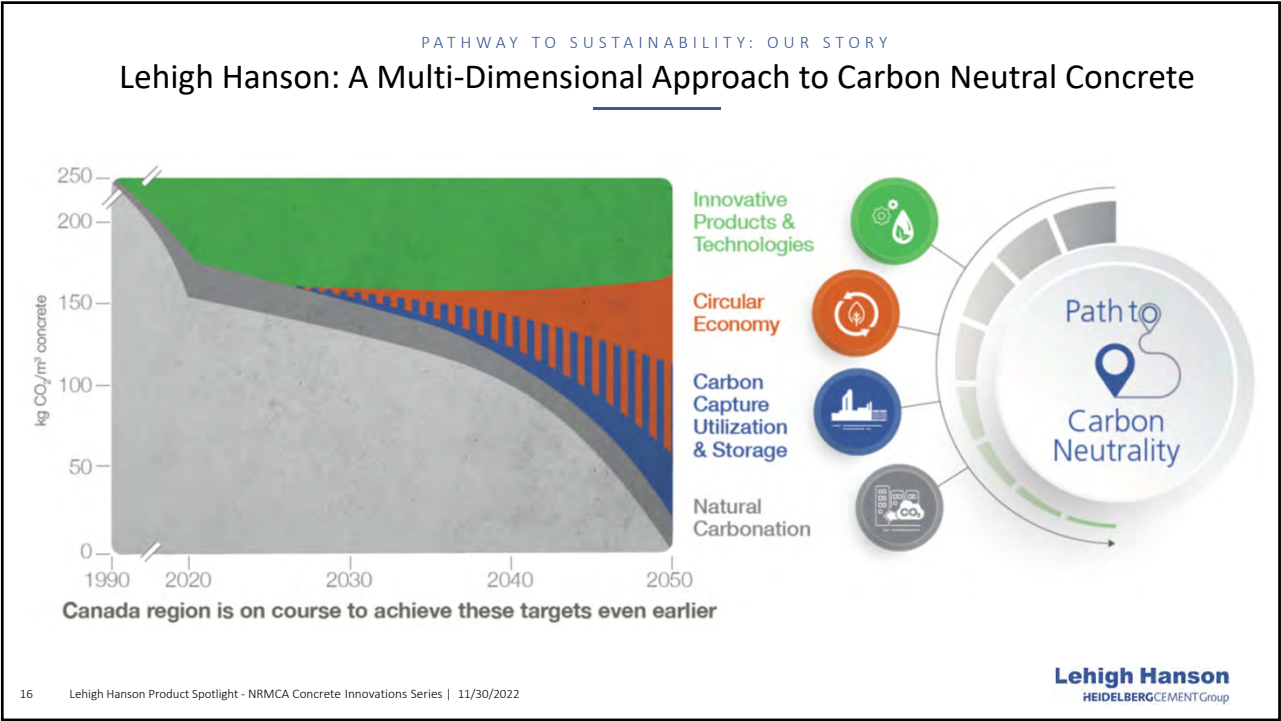
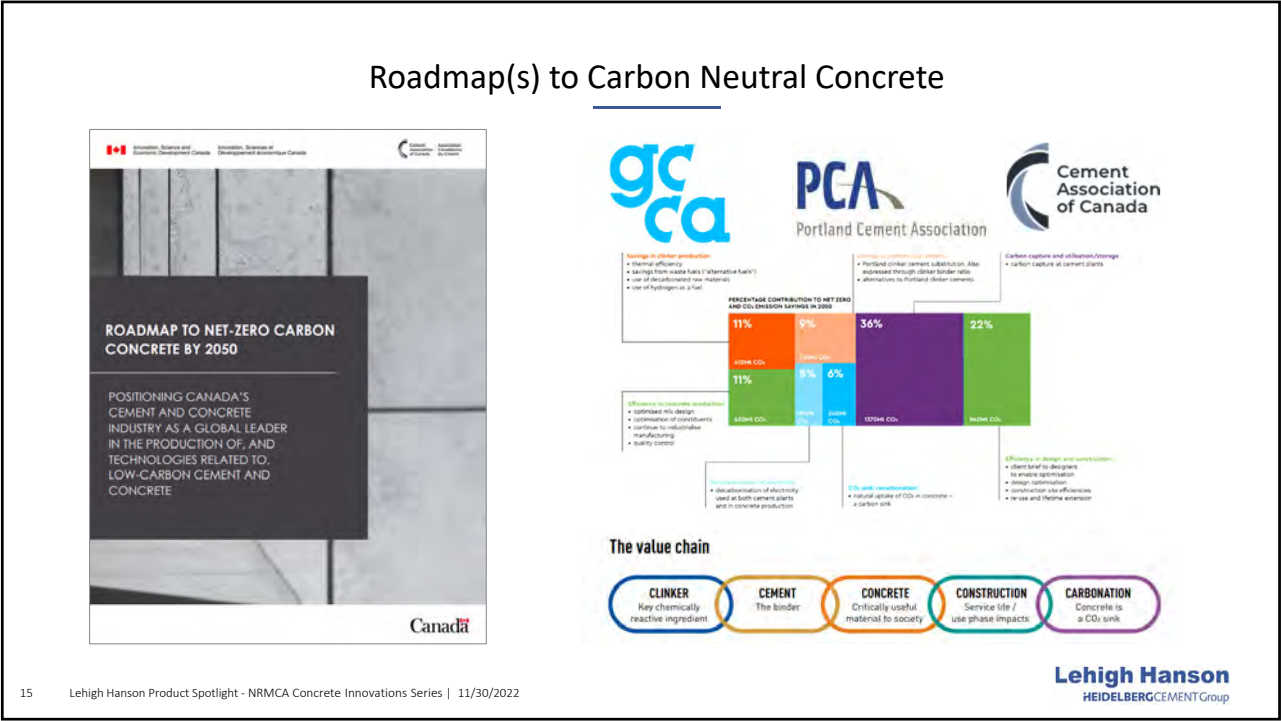
- [The City of Vancouver, British Columbia](#)
- [The City of Portland, Oregon](#)
- [Marin County, California](#)
- [Treasury Board of Canada's Low Carbon Concrete Procurement Policy \(Forthcoming\)](#)
- [US General Services Administration's Facilities Standards for the Public Buildings Service](#)



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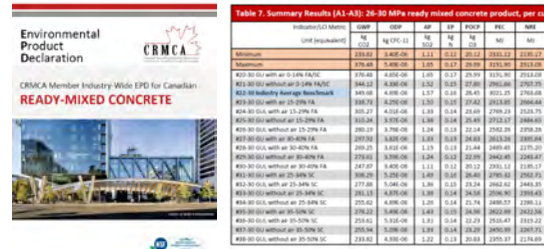






EVOBUILD™ LOW CARBON CONCRETE

## Dial up the green. Dial down the CO<sub>2</sub>.

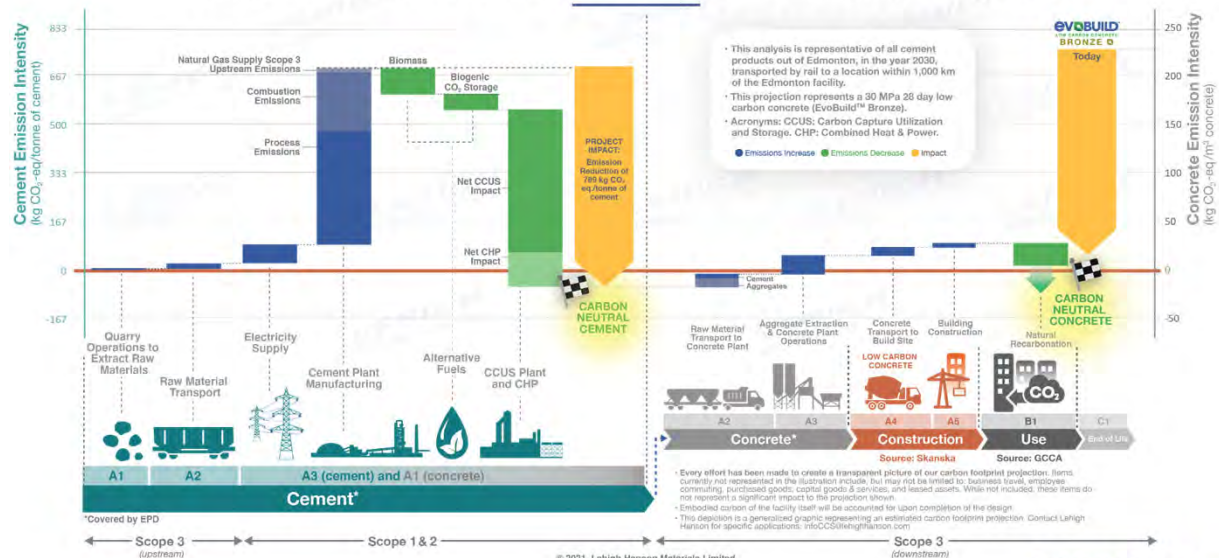


EvoBuild Bronze (30-50%), Silver (50-70%), Gold (70-85%) savings levels are measured against CRMA Industry Average EPD (2017) in Canada, and the “Typical” concrete values from the 2021 Carbon Leadership Forum Material Baselines in the United States.

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## Lehigh Edmonton Cement CCUS: Carbon Footprint Projection



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## Questions?

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