

# Montreal Gypsum Panels LCA Action Plan

## INTRODUCTION

### About CertainTeed

With innovative building solutions made possible through its comprehensive offering of interior and exterior products, CertainTeed is transforming how the industry builds. As leaders in building science and sustainable construction, CertainTeed makes it easier than ever to create high-performance, energy-efficient places to live, work and play, so that together we can *make the world a better home*.

A subsidiary of Saint-Gobain, one of the world's largest and oldest building products companies, CertainTeed has more than 6,900 employees and more than 60 manufacturing facilities throughout the United States and Canada. For more information visit: [certainteed.ca](https://certainteed.ca).

In July 2020 and July 2023, CertainTeed published Environmental Product Declarations (EPDs) on their gypsum drywall products. These EPDs can be found on the UL's Sustainable Product Database (<https://spot.ul.com>). We are committed to market transparency through **third-party verified EPDs**. These EPDs provide us with a baseline on potential environmental impacts that we will strive to act upon and reduce our footprint. The following products have been included within our LCA program with EPDs published for CertainTeed Gypsum Board product lines.

Table 1: Product Systems and Product Lines in LCA Action Plan Scope


PRODUCT SYSTEM	PRODUCT	EPD DECLARATION #	EPD EXPIRATION DATE
CertainTeed Gypsum Panels - Montreal, QC	GlasRoc Sheathing 5/8" Gypsum Board	UL - 4790745506.107.1	July 1, 2028
	M2Tech Type X 5/8" Gypsum Board	UL - 4789532059.109.1	July 1, 2025
	Type C 1/2" Gypsum Board	UL - 4789532059.117.1	July 1, 2025
	Type C 5/8" Gypsum Board	UL - 4789532059.124.1	July 1, 2025
	Type X 5/8" Gypsum Board	UL - 4789532059.132.1	July 1, 2025

This action plan is eligible for credit under LEED v4.1 (*Building Product Disclosure and Optimization: Environmental Product Declarations* credit - Option 2) for the optimization of the environmental footprint of the CertainTeed Gypsum (see Table 1). Any claimed improvement must clearly be linked to a specific formulation and/or supply chain improvement as opposed to a life cycle inventory (LCI) update per LEED requirements.

## Overview of the LCA

To ensure maximum accuracy and consistency in the optimization process, the following information about the LCA will be considered and is disclosed below (see Tables 2). Disclosing this information ensures that any positive development of the product is because of an improvement CertainTeed Gypsum has made, and not due to a software or methodology revision. In addition, all assessments shall use the same version of the LCA software and LCI databases to ensure consistency. However, limitations in the LCA exist and these are further discussed in the limitations section. The EPDs for this product line are available on the CertainTeed website [here](#).

**Table 2: Information and Assumptions Regarding 2020 and 2023 LCA Studies**

INFORMATION/ASSUMPTION/DATA	BASELINE VALUE/ OUTCOME FOR 2020 LCA STUDY	BASELINE VALUE/OUTCOME FOR 2023 LCA STUDY
LCA/Framework	TRACI 2.1 impact assessment ISO 21930 (2017)	TRACI 2.1 impact assessment
Reference PCR	NSF International PCR for Gypsum Panel Products v.1e October 2019	NSF International PCR for Gypsum Panel Products v.1e October 2019
LCA Software	Sphera Life Cycle for Experts (Formerly GaBi) v9.2	Sphera Life Cycle for Experts (Formerly GaBi) v9.2
Scope	Cradle to Grave	Cradle to Grave
Primary Impact Drivers	Raw Material Transportation, Installation, Manufacturing Energy Use, Packaging Materials	Raw Material Transportation, Installation, Manufacturing Energy Use, Packaging Materials
Manufacturing Facility	Montreal, QC	Montreal, QC
Data Performance Year	2019	2019
Total Transportation Distance (A4)	40 km- Truck 208 km- Rail 448 km- Commercial tractor-trailer truck	40 km- Truck 208 km- Rail 448 km- Commercial tractor-trailer truck
Installation Scrap Rate (A5)	10%	10%
Product Disposal Method (C4)	100% Landfilled	100% Landfilled
LCA Practitioner	Saint-Gobain North America: 2020 Gypsum Generator Model verified by UL	Saint-Gobain North America: 2020 Gypsum Generator Model verified by UL
LCA Action Plan Developer	CertainTeed Gypsum	CertainTeed Gypsum
CertainTeed Canada Executive Approval		 Julie Bonamy



CertainTeed Canada, Inc.'s drywall plant in Sainte-Catherine, Quebec.

**Table 3: Baseline- Life Cycle Impact Assessment for Cradle to Grave**

TRACI 2.1 ENVIRONMENTAL IMPACTS A1-A3 LIFE CYCLE STAGES (PER 92.9M2 OR 1,000 FT <sup>2</sup> )							
Product	Global Warming Potential, excl. Biogenic	Global Warming Potential, incl. Biogenic	Ozone Depletion Potential	Acidification Potential	Eutrophication Potential	Smog Creation Potential	Abiotic Depletion (fossil)
	kg CO <sub>2</sub> eq	kg CO <sub>2</sub> eq	kg CFC-11 eq	kg SO <sub>2</sub> eq	kg N eq	kg O <sub>3</sub> eq	MJ
CertainTeed Gypsum Panels - Montreal, QC	GlasRoc Sheathing 5/8"	5.14E+02	4.77E+02	4.13E-05	4.38E+00	2.77E-01	8.22E+01
	M2Tech Type X 5/8"	4.90E+02	3.62E+02	1.11E-04	3.67E+00	3.13E-01	6.94E+01
	Type C 1/2"	4.10 E+02	2.89E+02	4.92E-05	3.01E+00	2.33E-01	5.70E+01
	Type C 5/8"	4.87E+02	3.64E+02	5.33E-05	3.83E+00	2.67E-01	7.33E+01
	Type X 5/8"	4.32E+02	3.12E+02	7.46E-05	3.41E+00	2.52E-01	6.49E+01

It is important to note that any improvements of these products shall only be compared against the same type. For example, an improvement of a Type X 5/8" Gypsum Board - Montreal, QC shall only be compared against the baseline Type X 5/8" Gypsum Board - Montreal, QC LCA results and not against any other type to ensure consistency.

## Targeted Reduction

The targeted reduction is from the raw material, transport, and manufacturing life cycle stages.

Reductions from the raw material and transportation are driven by increasing recycle content, up to 30% using local pre- and post-consumer waste. This will reduce inbound transportation of gypsum rock coming from various non-local sources to the manufacturing site.

Majority of the reduction will come from the manufacturing process, where energy efficiency will be improved by 30% by implementing several energy conservations measures. Alongside improving energy efficiency, the whole production process will be electrified, switching the current natural gas process equipment to equipment powered by hydroelectricity. This fuel switch will eliminate up to 99.5% of the impact of the manufacturing step on the life cycle analysis.

## Strategy

To achieve carbon neutrality, Saint-Gobain has published a CO<sub>2</sub> roadmap. The roadmap incorporates the Group's commitments through to 2030 in terms of reducing not only its direct and indirect carbon dioxide emissions, but also the emissions along its value chain. These new targets for 2030 have been validated by the Science-Based Targets (SBT) initiative which considers them aligned with the Group's 2050 net-zero commitment:

- 33% reduction in scope 1 and 2 emissions in absolute terms compared to a 2017 baseline
- 16% reduction in scope 3 emissions compared to 2017

CertainTeed's collaborative teams have identified areas in which to focus over the next five years from the original performance period of 2019 to reduce the impacts from producing these gypsum board products. These actions will include:

### Energy Efficiency Programs

- Replace natural gas burners with highly efficient electrical heating elements
- Improve compressed air design
- Implement energy meters and energy management system
- Implement heat recovery
- Upgrade equipment insulation
- Add process sensors to monitor and improve production quality

### Material and Transportation Efficiency

- Increase recycled content by using pre- and post-consumer waste
- Reduce inbound transportation of natural gypsum rock from various sources

## Timeline

The estimated timeline for this optimization is outlined in the table below. If at any point it becomes clear that any improvement or optimization is not possible because of technical limitations, this action plan shall be taken down by CertainTeed. Additionally, if any significant delays occur, the timeline shall be updated to reflect this. The timeline will be checked for accuracy at least once per year.

**Table 4: Reduction Strategies Schedule for life cycle impact assessment (LCIA) Optimization**

LIFE CYCLE PHASE	TARGETED GWP REDUCTIONS PER LIFE CYCLE STAGE (%)	PROCESS STEP	TARGET COMPLETION DATE	ANTICIPATED TARGETED GWP REDUCTION IN RESPECTIVE LIFE CYCLE STAGE (%)
A1. Raw Materials	0%	Increasing recycled content not expected to decrease A1 significantly	January 2025	0%
A2. Transportation of Raw Materials	0% to 30%	Increasing recycled content by up to 30%	January 2025	Up to 30%
A3. Manufacturing	80% to 100%	Replacing equipment with higher energy efficiency and their electrification	January 2025	Up to 100%

## Limitations

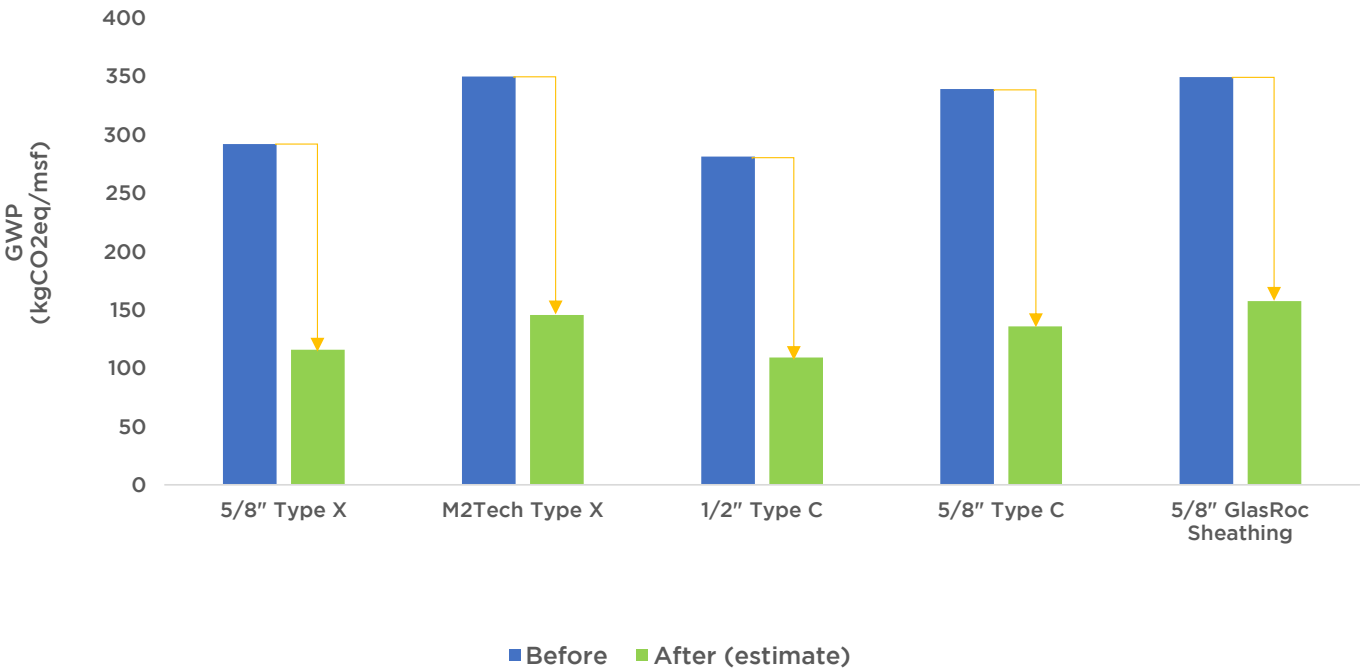
LCA does not have a measure of true uncertainty and its results are changing constantly. While quality control was undertaken at each step in building the life cycle inventory (LCI) and conducting the life cycle impact assessment (LCIA), uncertainty is present in the results since the data represents limited years of manufacturing information. Many assumptions were made in the modeling of the product system with representative processes and datasets. CertainTeed will use the best available data and resources when conducting its assessments and will ensure that any Optimized LCA meets the relevant ISO comparability requirements. However, any LCAs shall not be used as a comparative assertion or overall superiority claim per ISO requirements.

## Sources

<https://www.saint-gobain.com/en/corporate-responsibility/our-pillars/climate-change>

Appendix A

Comparison of Cradle-to-gate A1-A3 LCA of Montreal drywall panels before and after equipment electrification alone\*

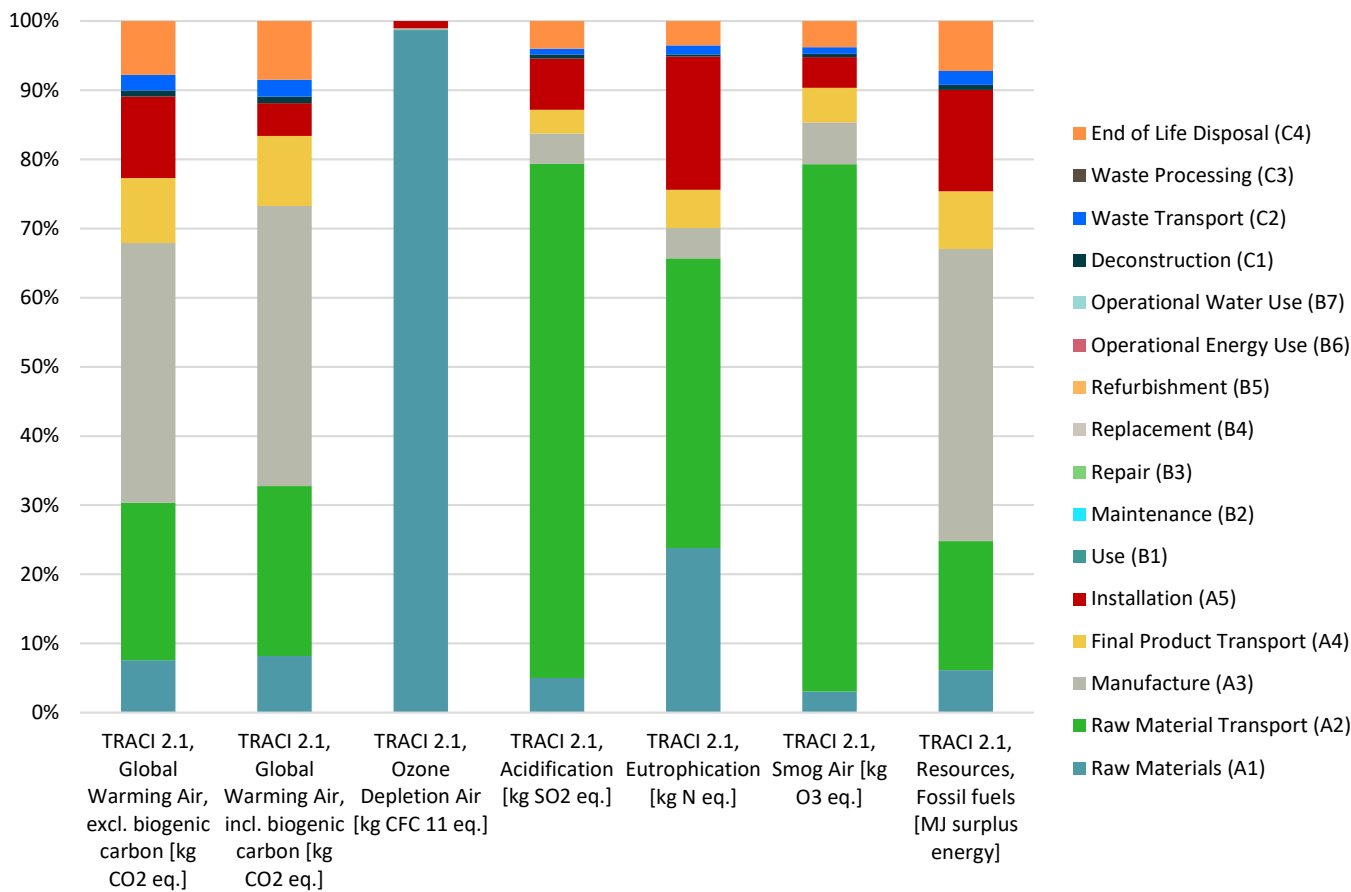


\*Further benefits expected from other initiatives mentioned in the document

Appendix B

Environmental Impact Potential Distribution Across Life Cycle for aforementioned products

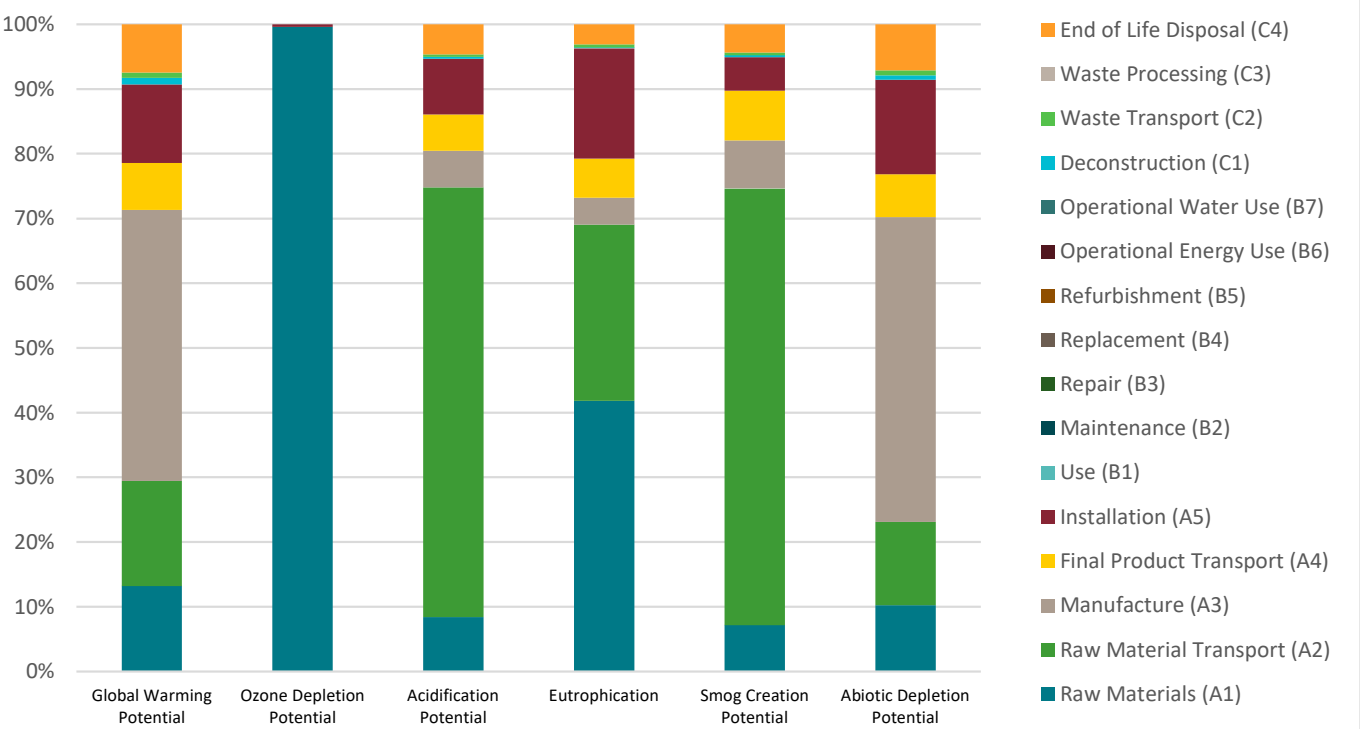
1. GlasRoc Sheathing 5/8" Gypsum Board - Montreal, QC



Appendix B: cont'd

Environmental Impact Potential Distribution Across Life Cycle for aforementioned products

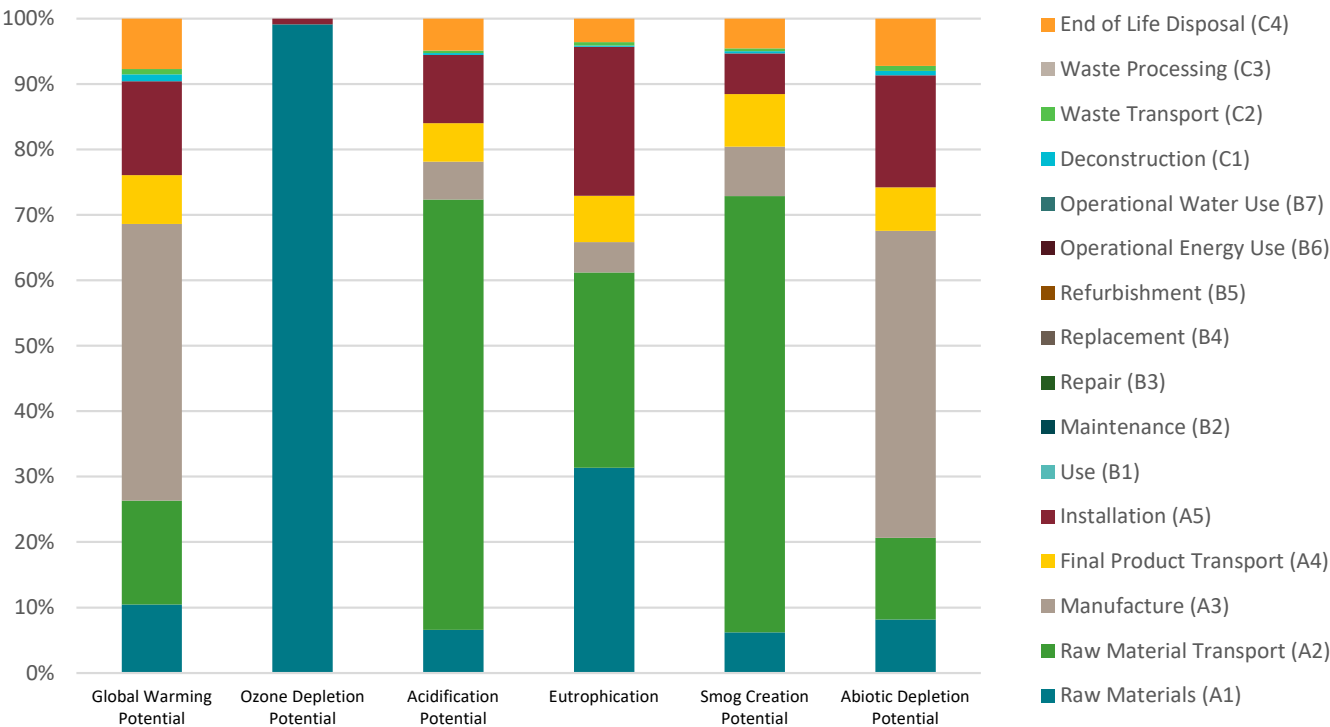
2. M2Tech Type X 5/8" Gypsum Board - Montreal, QC



Appendix B: cont'd

Environmental Impact Potential Distribution Across Life Cycle for aforementioned products

3. Type C 1/2" Gypsum Board – Montreal, QC

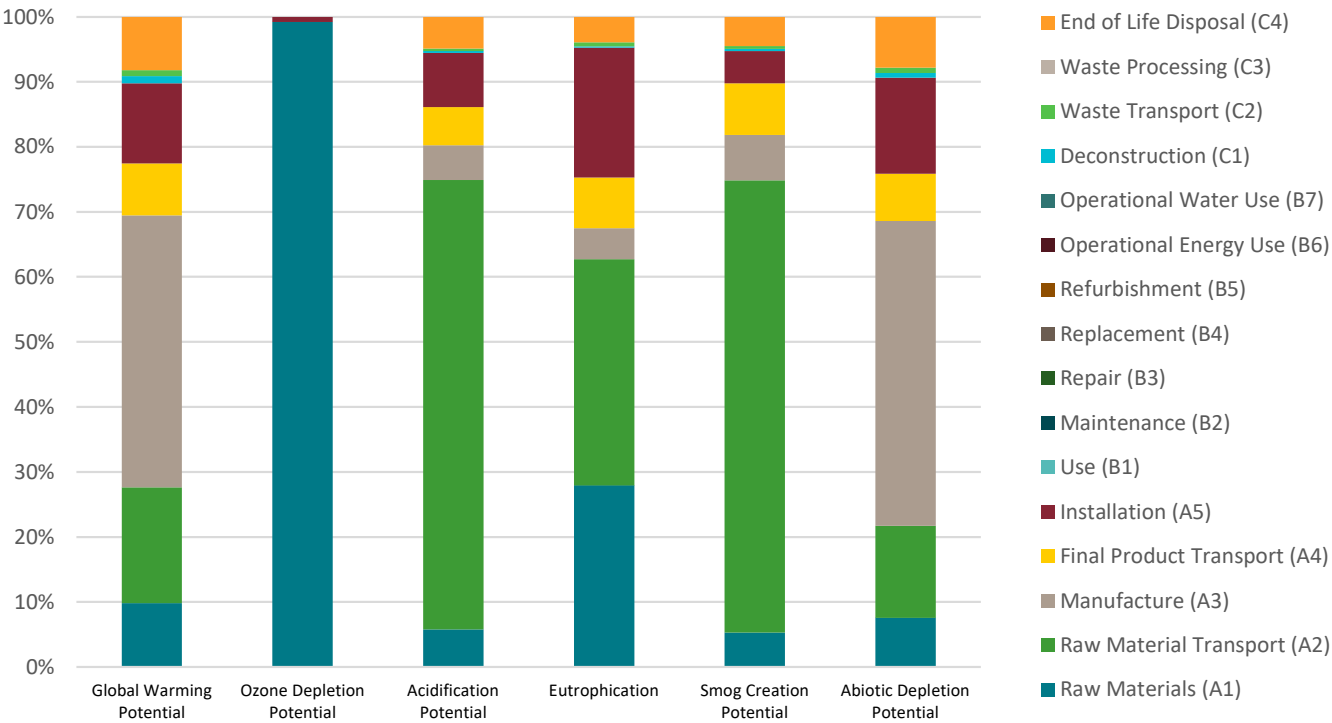




Appendix B: cont'd

Environmental Impact Potential Distribution Across Life Cycle for aforementioned products

4. Type C 5/8" Gypsum Board - Montreal, QC



## Appendix B: cont'd

### Environmental Impact Potential Distribution Across Life Cycle for aforementioned products

#### 5. Type X 5/8" Gypsum Board – Montreal, QC

