

# Mercer Mass Timber and the Environment

March 2024

# INTRODUCTION

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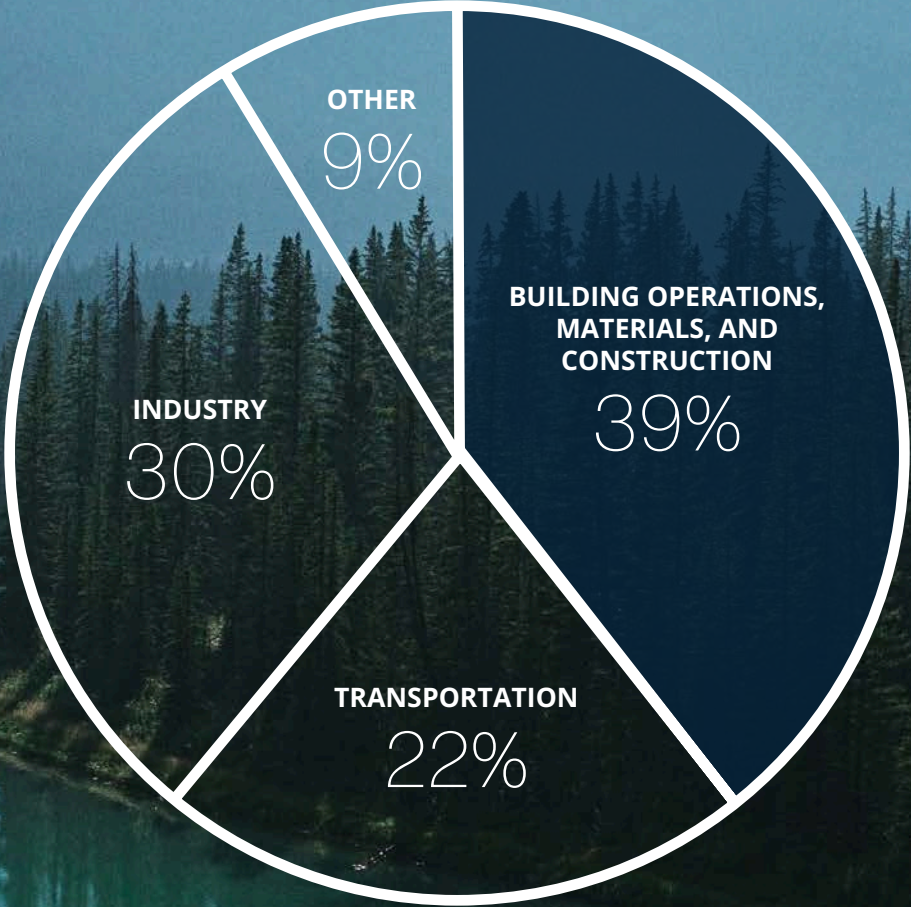
At Mercer Mass Timber, we believe mass timber will become the backbone for future generations of high-performance, low carbon buildings across the globe.

As building energy efficiency improves and the planet rapidly urbanizes, embodied carbon is estimated to be responsible for almost half of new construction emissions between now and 2050<sup>1</sup>. Utilizing construction materials with lower embodied carbon can significantly reduce a building's negative environmental impacts.

Mass timber provides lighter, stronger, and a more sustainable alternative to carbon-intensive concrete and steel structures, but limited availability in the North American market has constrained its adoption.

Mercer Mass Timber is changing that. Our mass timber factories in Washington state, Arkansas, and British Columbia were built to bring environmentally-responsible, cost effective mass timber building systems to the North American market.

# Global CO<sub>2</sub> Emissions by Sector<sup>2</sup>



# Environmental Certifications

## Chain of Custody

Chain of custody traces the path of wood from certified forests through the supply chain to the final product, addressing factors including biodiversity, habitat conservation, sustainable harvest levels, and watershed protection.

Our factories in Spokane Valley, Washington; Conway, Arkansas; and Penticton, British Columbia have earned chain of custody certification<sup>3</sup> from three major certification programs:



Programme for the Endorsement of Forest Certification



Sustainable Forestry Initiative®



Forest Stewardship Council®

## Responsible Sourcing

Sustainably managed forests support rural economies. Mercer Mass Timber has adopted strict internal policies to govern procurement of 100% of our CLT lumber from well-managed forests, strategically sourcing species from forests known for their tight grain structure, integrity, and quality.

## Transparency

MMT is committed to third-party environmental certification and material content disclosure. We are also committed to procuring a Type III Environmental Product Declaration (EPD) to ISO 14025 for our CLT product line, anticipated to commence in 2024 now that the factory has been in operation for a minimum of 12 months in accordance with the standard.

## Global Citizenship

By embracing the ethos of corporate citizenship, we strive to uphold our social and environmental responsibilities and make a meaningful impact on the world. Under the umbrella of our parent company, Mercer International, we have aligned with organizations that further the goals to achieving a more sustainable and equitable future for all.



SCIENCE BASED TARGETS



We are a signatory of the SBTi, the initiative that sets science-based targets through a rigorous and transparent target-setting process. Our commitment is to reduce Scope 2 and 3 emissions 35% by 2030.



BSR®

We are an exclusive member of Business for Social Responsibility (BSR), a global nonprofit organization that works with businesses to promote sustainability and social responsibility in the private sector.



United Nations Global Compact

Mercer is also a signatory of the world's largest corporate sustainability initiative.

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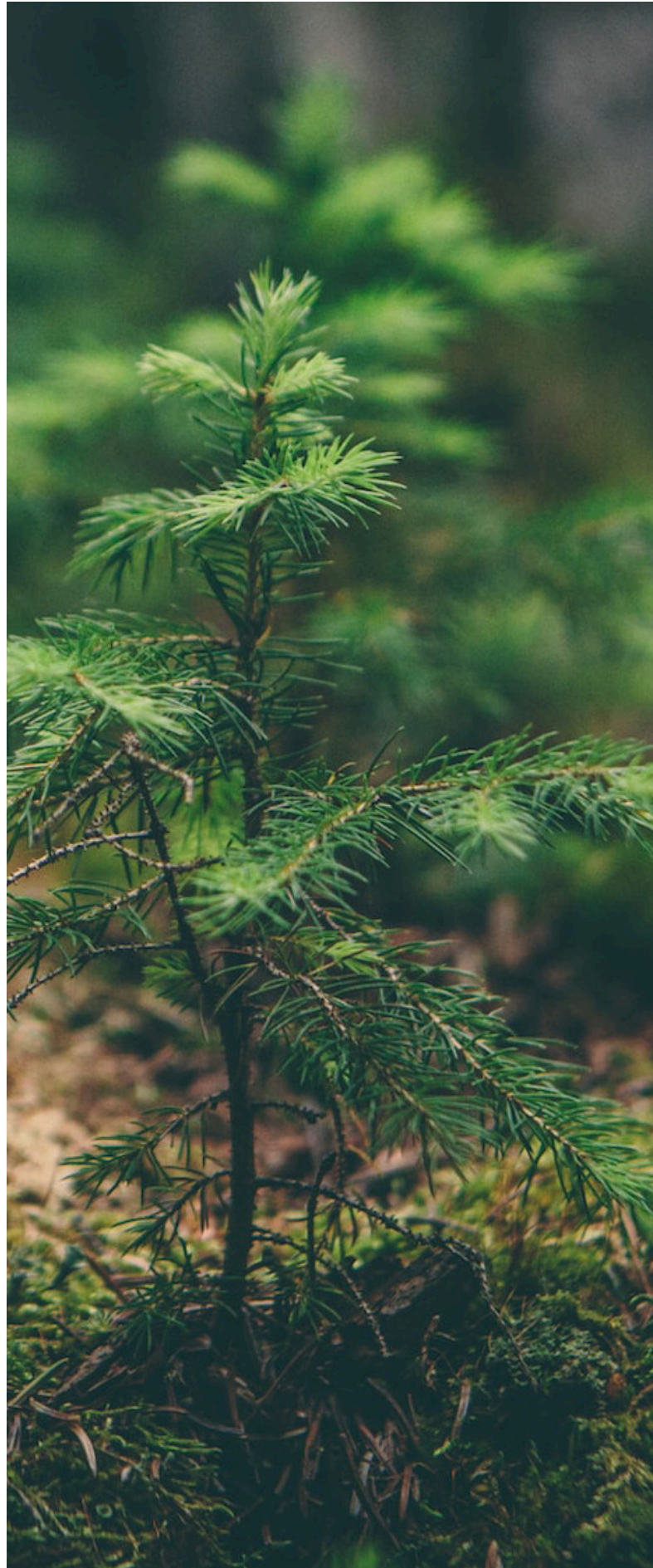
## SFI Plus M

MMT has created a premium lumber supplier verification process for clients that require elevated supply chain assurance to meet their sustainability or ESG goals. This option is referred to as 'SFI plus M' where the 'M' represents Mercer - Enhanced Due Diligence Verification, specific to lumber procurement for use in engineered wood products.

Mercer has established unique relationships with key, well respected forestry companies that go far beyond the typical supplier to customer transactions. This relationship is built on transparency and trust - fundamental components of Sustainable Forest Management (SFM). SFM is core to the Sustainable Forestry Initiative® (SFI®) and its Forest Management Standard (SFI FM certification).

Upon request, Mercer can pre-qualify wood suppliers for a project that provides our customers with the confidence that the supply chain due diligence goes beyond the traditional Chain of Custody claim used in the various Green Rating Building Programs. Mercer can facilitate the compilation of a variety of assurance or verification materials from its suppliers to meet a multitude of topics. These topics include environmental, forest management, social and human rights information and can be tailored to meet the clients specification. Many of these topics are also 3rd party audited annually as a requirement of the SFI FM certification maintained by the supplier.

SFI FM certified suppliers are broadly distributed across North America which contributes to efficiency in the procurement process to ensure quality input materials that meet client timelines and sustainability expectations.





Wood Innovation Design Centre  
Prince George, BC

WOOD INNOVATION  
AND DESIGN CENTRE

- LECTURE THEATRE →
- GALLERY OF WOOD ←
- RESEARCH LAB →
- ELEVATOR ACCESS ←
- EXIT TO 5TH AVE ←
- LECTURE THEATRE ←



# Green Building Rating Programs

The inclusion of mass timber on a project can help advance credit achievement for various green building rating programs, including Leadership in Energy & Environmental Design (LEED), the Living Building Challenge (LBC), the Passivhaus Standard, and the WELL Building Standard. Upon request, MMT can provide guidance on how our CLT and GLT products can contribute to achieving select credits or green building goals.

## Credit Potential

Through chain of custody certifications and a forthcoming Environmental Product Declaration, MMT promotes transparency about the lifecycle impact of our mass timber products. This can help achieve credits related to sourcing, material restrictions, transparency, and education. When used in an enclosure assembly, mass timber contributes to a building's thermal integrity and energy code compliance. In turn, this can help achieve credits related to energy efficiency and thermal performance. Exposing CLT and GLT at interiors showcases the material's natural grain and tonal warmth, promoting illuminance and a connection to nature, which supports occupant health. This can help achieve credits related to wellness and biophilia. Compared to conventional structural systems, mass timber production and installation generates minimal waste and debris, which can help achieve credits related to material optimization and construction waste reduction.



### Passive House 3rd Edition

#### Core Principles

- Thermal Insulation
- Thermal Bridge Reduced Design
- Airtightness



### LEED v4.1 BD+C

#### Indoor Environmental Air Quality

- Low-Emitting Materials
- Thermal Comfort

#### Materials & Resources

- Environmental Product Declarations
- Responsible Sourcing of Raw Materials
- Building Life-Cycle Impact Reduction
- Construction & Demolition Waste Management



### WELL v2

#### Materials

- Materials Transparency

#### Mind

- Nature & Place
- Restorative Spaces

#### Thermal Comfort

- Thermal Performance
- Verified Thermal Comfort



### Living Building Challenge 4.0

#### Energy Petal

- Energy + Carbon Reduction
- Net Positive Carbon

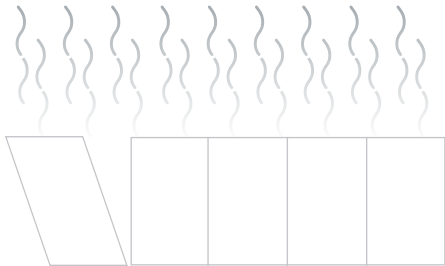
#### Materials Petal

- Responsible Materials
- Responsible Sourcing
- Living Economy Sourcing
- Red List
- Net Positive Waste

#### Beauty Petal

- Beauty + Biophilia

# Carbon Impact

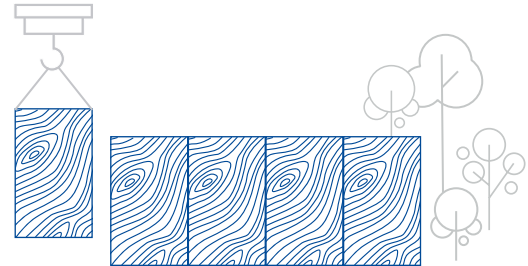


Concrete Tilt-up Wall

↑ 12.20 kgCO<sub>2</sub>e  
GWP cradle-to-gate

## The Climate Benefits of CLT

Per square foot, CLT significantly reduces the carbon footprint of new buildings in comparison to structural concrete.



Cross-Laminated Timber Wall

↓ 0.34 kgCO<sub>2</sub>e  
GWP cradle-to-gate including biogenic carbon

## Global Warming Potential

During early-stage design exercises, MMT can provide preliminary assessments of a project’s carbon footprint through an informal Global Warming Potential (GWP) study. This can involve quantifying the comparative carbon benefit of using mass timber versus conventional building systems, or translating the total volume of CLT or GLT to equivalencies of greenhouse gas reduction. These studies do not intend to replace formal Life Cycle Assessments, but instead endeavor to open a design conversation with a project’s stakeholders about opportunities to reduce potential carbon impact of a forthcoming project.

## Lifecycle Assessment

Compared to conventional construction, mass timber carries lower embodied carbon and global warming potential, which would be demonstrated in a project’s formal Life Cycle Assessment (LCA). Upon request, MMT can provide completed, critically-reviewed LCA’s for reference, which can help highlight the expected impact mass timber can have on a new project.





UW Founders Hall  
Seattle, WA

## Efficiency + Performance

### Material Efficiency

Our mass timber panels are manufactured with small dimensional lumber, making them more resource efficient than conventional heavy timber framing. MMT also offers the opportunity to work with clients to design solutions around optimal cut panel dimensions, to maximize use of pressed billets and minimize material waste. Where generated, manufacturing byproducts are collected for secondary uses, including as furniture, fuel, and chipped material source for fiberboard and particleboard manufacturing.

### Construction Efficiency

Mass timber building systems enable increased construction productivity, with automated fabrication in a controlled factory environment reducing waste and enabling streamlined field assembly. Mass timber buildings are roughly 25% faster to construct and require up to 90% less construction traffic than concrete buildings<sup>5</sup>.

### Integrated Technical Design

With natural wood's pleasing aesthetic, mass timber structures can be left visually exposed, eliminating supplemental finish materials. MMT's 5-ply CLT panels also exceed a two-hour fire rating, meaning additional fire resistance treatments can be minimized. Mass timber buildings are significantly lighter than comparable concrete buildings, reducing foundation size and seismic forces in addition to associated embodied energy<sup>4</sup>. When deployed as a component of the thermal envelope, MMT CLT and GLT can also contribute to efficiency in a building's thermal design: CLT is an airtight thermal mass with low conductivity, carrying a nominal value of R-1.25 per inch, helping to minimize additional insulation where required. MMT mass timber can also be designed for deconstruction: through simple connection detailing, a design can promote future panel removal and material reuse, and limit impact or damage to adjacent assemblies that would otherwise need replacement.

### Living Economy

Humans have an affinity for natural materials and elements that incorporate or evoke nature, known as the "biophilic effect." Studies have found that subjects perceive wood as "warm," "inviting," "homey," and "relaxing" than all other tested materials, and demonstrate physiological and psychological benefits to viewing wood<sup>6</sup>. These attributes can help improve workplace wellbeing, staff retention, and organizational productivity. Through environmental certifications, MMT mass timber also promotes the expansion of a regional economy rooted in sustainable practices.

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<sup>1</sup> "New Buildings: Embodied Carbon," Architecture 2030.com, [architecture2030.org/new-buildings-embodied](http://architecture2030.org/new-buildings-embodied)

<sup>2</sup> UN Environmental Global Status Report 2017; EIA International Energy Outlook 2017

<sup>3</sup> Chain of custody certification provided upon project request for the forest stewardship program specified. Consult with Mercer Mass Timber about layup availability for the certification requested.

<sup>4&5</sup> "4 things to know about Mass Timber," ThinkWood.com, April 25, 2018, [thinkwood.com/news/4-things-to-know-about-mass-timber](http://thinkwood.com/news/4-things-to-know-about-mass-timber)

<sup>6</sup> "Nature in Design: The Biophilia Effect," APA – The Engineered Wood Association.com, [apawood.org/designerscircle-nature-in-design-the-biophilia-effect](http://apawood.org/designerscircle-nature-in-design-the-biophilia-effect)

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Mercer Mass Timber (MMT) is a wholly-owned subsidiary of Mercer International, a global provider of renewable materials and energy.



# Mercer Mass Timber

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