

## News From MTI

Hello Mass Timber Colleagues!

# Ontario municipalities increasingly concerned with lower carbon building materials

*By Ryan Zizzo and Kelly Alvarez Doran, April 20, 2022*

The past decade has seen massive changes in how we design and operate our buildings. Changes include increasingly efficient building envelopes, high-tech mechanical systems moving away from fossil fuels and towards electric powered heat pumps and geothermal systems, and on-site renewable energy generation from solar panels. These changes have greatly reduced the carbon footprint associated with operating new buildings and when combined can lead to buildings that can be operated at nearly-zero carbon.

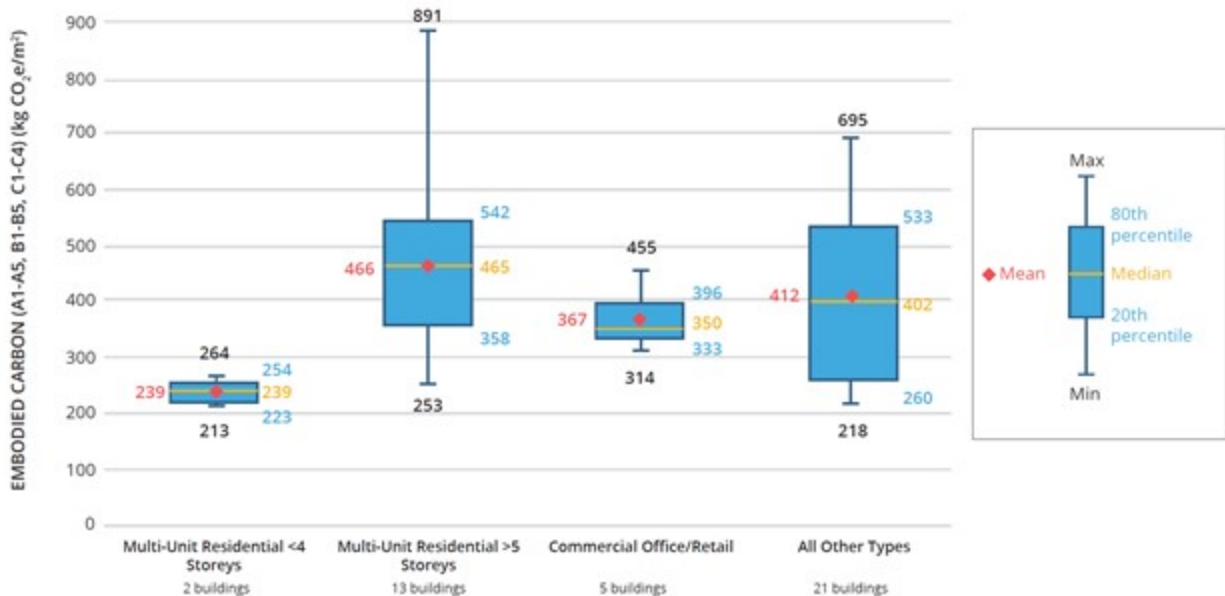
As our path to nearly-zero operations becomes clearer, an increased focus is now being paid to the upfront carbon impacts of constructing the buildings and infrastructure of our cities. The emissions associated with manufacturing, transporting, and assembling building materials are referred to as 'embodied emissions' or 'embodied carbon'. For typical new high efficiency buildings in Ontario, these embodied emissions can represent from 10 to 60 years of equivalent operational emissions.

There are many low- to no-cost options that building design and construction teams can make to reduce the embodied carbon on their projects. Jurisdictions around the world and in North America are starting to roll out embodied carbon policies to encourage this change. For example, Vancouver already requires all buildings applying for a rezoning to calculate and report their embodied carbon. The Government of Canada has set embodied carbon targets for their new construction, to be reduced by 30% by 2025. Ontario municipalities are now starting to consider the best way to manage these emissions. Last year, The City of Toronto received funding from The Atmospheric Fund

to work with a consultant team to perform the first self-reported embodied emissions benchmarking study for large (Part 3) buildings in Ontario - those greater than 3 storeys in height and/or 600m<sup>2</sup> in floor area.

The study brings together Ryan Zizzo's team of consultants at [Mantle Developments](#) with the ongoing research initiatives of Kelly Alvarez Doran's [Ha/f Research Studio](#) at the University of Toronto's John H. Daniels' Faculty of Architecture, Landscape, and Design. The project took advice and guidance from a 30-person Project Advisory Committee composed of a range of construction industry players from designers to manufacturers to policy-makers.

The team collected self-reported whole building embodied emission calculations from 41 large (Part 3) buildings in Ontario, 15 of which were performed by the Ha/f Research Studio. The below results and [findings](#) are the first attempt at embodied carbon (self-reported) benchmarking in the province.



Some interesting findings include that most projects have their embodied carbon intensity (kg CO<sub>2</sub>e/m<sup>2</sup>) below a relatively common threshold, which could set the stage for future 'carbon caps' on construction. The results also show the range in carbon intensity that is possible in current construction projects, meaning there is significant carbon avoidance that can be achieved if the worst performers change their ways. In the sample set, most projects didn't actively try to minimize their embodied carbon and rather were just measuring it. Therefore, it is believed that significant reductions from these self-reported values is possible when teams actively look for lower carbon materials and start optimizing for this metric.

The team also worked directly with two in-design City of Toronto projects (a new ambulance building and a community centre) to identify easy material substitutions that

could be implemented to reduce embodied emissions. The team found that the projects were able to reduce their embodied emissions by around 30% with a few simple changes to material procurement, most notably by using lower-carbon concrete mixes and insulation.

The [Toronto Green Standard version 4](#) launches in May 2022 and is the first version of the standard to include embodied emissions. The results from this study will help inform updates to this standard and will be shared widely with other Ontario municipalities to help in their development of new policies to manage construction-based emissions. The team will be holding a series of industry workshops over the coming months. Please sign up [here](#).

## News from the Institute

### 1. Professor Rob Wright wins 2022 Vivek Goel Faculty Citizenship Award

Congratulations to Robert Wright, MTI's Principal Investigator on winning the 2022 Vivek Goel Faculty Citizenship Award. Alongside his work at the Mass Timber Institute, Professor Wright has provided leadership in various other appointments at the Daniels Faculty covered in [this article](#).

### 2. The Mass Timber Institute Welcomes Summer Intern

The Mass Timber Institute would like to welcome our first internship summer student: Bingyi (Alex) Hou. Alex is currently studying in the [Master of Forest Conservation](#) (MFC) Program at the University of Toronto. Within the institute, he will be working under Assistant Professor [Dr. Rasoul Yousefpour](#) and MTI Director [Dr. Anne Koven](#) on an Ontario wood supply project in collaboration with [CRIBE](#). His internship work will flow into a capstone project that will be showcased in December with the rest of the MFC cohort.

## Other Updates



- One of the primary benefits of mass timber is sustainability. Wood is a sustainable material when sourced appropriately. But, what happens when the mass timber buildings reach their end of life? Could it be possible to re-use materials from other buildings for use in new mass timber construction? Arch Daily describes [Design for Deconstruction](#): how building materials can be re-used or recycled and repurposed so they don't end up in landfill and limit their embodied carbon.
- A new [Mass Timber Action Plan launched](#) in BC. This action plan was announced on Thursday April 7, 2022 with \$1.2 million in funding.
- Ontario announced the "More Homes for Everyone Act 2022". This program will be

supportive of the R-Hauz program for sustainable mass timber housing. [Read the article by R-Hauz here](#)

- The same plan will also permit 12-storey mass timber buildings to be constructed in Ontario. This still falls behind BC's building permit, but is a step in the right direction. [Learn more here.](#)
- The City of Toronto is launching a pilot program for mass timber construction, beginning with an [affordable housing development](#).
- The virtual version of the International Mass Timber Conference in Portland, USA will take place on May 12th. [Learn more and register here.](#)

---

Mass Timber Institute Website



---

Copyright © 2022 Mass Timber Institute, All rights reserved.

You can reach us by phone at:  
416-978-0561

Want to change how you receive these emails?

You can [update your preferences](#) or [unsubscribe from this list](#).

---

This email was sent to <<Email Address>>

[why did I get this?](#) [unsubscribe from this list](#) [update subscription preferences](#)  
Mass Timber Institute · 1016W-33 Willcocks St · Toronto, On M5S 3B3 · Canada

