

TOE | TIMBER ONLINE EDUCATION

Global Online Education for a Carbon Neutral Building Future

EXECUTIVE SUMMARY

TOE | Timber Online Education is a global resource for teaching sustainable wood design, construction, fabrication, development, policy and environmental education. The program is run by DBR | Design Build Research, a Vancouver not-for-profit institute focused on global design and construction education. The TOE program is in its introductory phase and seeks funding from the Canadian government to help provide Canadians and the international community with essential knowledge to build wood buildings and especially advanced urban-scale wood buildings in a safe, economical, and sustainable manner.

TOE's mission is to address some of the biggest challenges facing Canada and the planet today. The world faces an existential climate and population crisis. New and affordable housing is needed to accommodate growing urban populations worldwide. Today our built environment contributes more than a third of our energy use and carbon emissions. There is a persistent lack of jobs and shortage of skilled labour in the construction, manufacturing, and rural industries that cannot keep up with demand. We need a solution that can reconcile these complex, interconnected issues by creating a shared resource for education and innovation in the built environment.

Wood construction, is not only engrained in our cultural identity as Canadians, it is the answer to the question of how we will build climate neutral buildings to meet the world's needs. TOE ensures that we can meet these needs with Canadian design, engineering, construction, wood products, and forestry and environmental expertise. The essential backbone of TOE is to advanced the use of carbon-sequestering sustainably sourced engineered wood products in urban-scale buildings. To date no global forum exists to provide the full spectrum of stakeholders with the education, resources, research and accessible public information to make informed decisions, increase economic opportunity and jobs, and manage environmental and social opportunity.

TOE brings world-leading experts into the online education realm reaching millions of people at a very low cost per user. By teaming experts with education and communication specialists, courses tailor to diverse learning methods and are delivered in many languages. With a broad curriculum covering all stakeholder groups involved in building, as well as programs for the general public, and all ages and education levels from orientation programs for K through 12 "teaching the teacher courses" to technical job training; and from post-secondary academic courses to critically important continuing education for professionals and trades in the private and public sector.

TOE is an essential educational resource to ensure safe and sustainable building around the world and here at home. The program helps Canada's forestry, design, development, and construction industry grow internationally. By offering courses in Cantonese, Mandarin, Hindi, Spanish, German, and of course French and English, Canada can expect to grow our markets by educating construction professionals in other nations how to build with our wood products and our systems.

The program champions Canadian economic, social, and environmental ambitions raising our voice as a global leader in sustainable and safe building practices. As an online resource TOE penetrates deep into Canadian society, supporting the full chain of custody of the built environment. TOE courses are diverse enough to fill voids in our current system from missing expertise in our post-secondary engineering schools to technical trade instruction on jobsite safety, advanced computer aided cutting tools, and off-site construction techniques; from expanding the development community's understanding of the market forces behind sustainable design, insurance, cost impacts, and risk management to public policy to support building codes and fire departments. The courses TOE offers will expand over time to create a central global resource for an affordable, safe, sustainable, climate sensitive built environment.

Although some programs exist that slightly overlap with TOE's ambition, none is established to address the cohesive fabric of the entire building stakeholder community. No program has a similar intent to link the international expertise necessary to advance innovation and education. TOE stands alone in the world in its ambition and capability to reshape the future of sustainable wood building worldwide.

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CONTEXT | CLIMATE + CHANGING THE WAY WE BUILD

The making and operating of buildings represents almost half of Canada's greenhouse gas emissions and energy use today. The vast majority of the climate and energy impact of buildings comes from the energy performance of our buildings. As energy performance increases the relative proportional impact of the built environment shifts from today's dominant operating energy (and corresponding greenhouse gas footprint) to embodied energy and CO₂. The new challenge to reducing the climate footprint of buildings is to focus on the embodied materials and their corresponding energy, environmental, greenhouse gas, and human health impact.

With urbanization in Canada and around the world humanity is shifting to living in increasingly larger and less suburban style homes. These larger urban buildings are currently the domain of steel and concrete, both having large greenhouse gas and energy footprints (+/- 10% of human GHG emissions)

The solution is a shift to the use of more carbon sequestering, renewable engineered wood construction in urban environments.

Wood when sourced from sustainably managed forests offers a strong, safe new way to build large buildings where the wood itself sequesters carbon in the building's structure. With new-engineered wood products we are already designing wood skyscrapers upwards of 30+ storeys. These all-wood structures offer the only practical means to attain Carbon Neutral and Carbon Positive buildings when considering the embodied materials.

This change is happening globally but there is little expertise and little knowledge of how and why this change will happen. With few global experts, the existing educational infrastructure for building sciences cannot keep pace with the need for transformation of the way we build.

That is the essence of why we have created the Timber Online Education (TOE) program.

TOE | GLOBAL EDUCATION BY WORLD LEADING EXPERTS

For the last century we have built our cities using steel and concrete. A move to carbon sequestering wood is a significant shift for a very slow moving industry. The industry is led by many groups who must collaborate together including building owners and developers, contractors, material fabricators, code and public officials, fire marshals, inspectors, architects and engineers, and of course the general public.

As we shift to building more in wood we also must ensure that buildings are safe and durable in all cases.

Currently there are a limited number of professionals and teachers around the world who understand and are experienced in this new way to build. The demand and interest in these buildings is growing quickly but an uninformed industry will risk mistakes that ultimately can cost lives or cause unintended environmental disaster.

To quell this concern TOE gathers the world's leading experts, teaming them with education and communication specialists to deliver high quality online courses in a wide range of disciplines. Courses are taught by experts in their native tongue and delivered in a host of languages to broaden the global understanding of the issues. Courses are offered to different user ages starting with orientation for the

general public to 'teaching the teachers' for K-12 courses. This said, the majority of the courses offered will be post-secondary and professional and trade development courses.

TOE offers courses for 6 main groups within the building industry with an overlapping menu of relevant courses in broad, general and highly detailed online sessions:

1. THE PUBLIC	All ages public orientation
2. REGULATORY	Public Policy, Code, Safety and Fire Officials
3. OWNERS	Public and Private Developers
4. DESIGNERS	Architects and Engineers
5. BUILDERS	Contractors and Manufacturing
6. THE FOREST	Forestry Industry, Environmental Organizations and Public Policy

Courses will range from theory to hands on practice capturing issues as diverse as the economics and risk management that owners must understand, to technical engineering, structural, fire and acoustic performance design, construction site safety and sourcing management, technical manufacturing equipment skills and safety to public policy, standards, testing, and inspection.

While TOE offers the global education needed to ensure safe, climate-sensitive building practices around the world it also directs users of the online platform to local resources within their country or region. In Canada for example, TOE will complement the Canadian Wood Council programs that specifically educate Architects and Engineers (4) and encourage Owners and Developers (3) to consider building in wood.

By sharing resources across international boundaries, the common language of safe sustainable building will be ensured and the cost to provide broad global knowledge will be much lower. The cost per user is estimated to be less than a dollar per course instead of \$1000's per individual to provide courses in a traditional university setting or through existing regional wood education courses.

There is no program in the world offering what TOE offers. There is a need to provide this education in the interest of global climate, environment, safety, and health. There is also a need for the Canadian economy and environment.

WHY CANADA?

The concepts of urban and 'Tall Wood' buildings have largely been championed here in Canada more than any other country to date. We are a recognized leader in the field and have a strong national history of producing exceptional building science and building safety knowledge. We also produce more wood housing per capita than any other country on earth and forestry remains an important aspect of our resource economy. This is Canada's domain and our opportunity to lead the world while building economic opportunity for our forestry, green construction, development, and design industry is important.

In recent years Canada is stepping into a larger role in the world. We are increasingly a leading voice in the world on climate policy and we are motivated to demonstrate leadership in the green and circular economy. With over a billion people in the world in need of safe new housing, Canada has an opportunity to lead the global conversation of meeting human need in the most sustainable way we can.

TOE is a program that will serve the world and the funding to do so will ultimately come from various countries that share Canada's ambition. This fall in Bordeaux, France, 6 countries will cosign an agreement with UNEP to develop their wood building industries as part of their national commitment to greenhouse gas reduction. Canada is a signature of the agreement.

Our mission is global but our impact is profoundly local. The courses TOE offers will transform opportunity in Canada for jobs in rural communities and high tech green jobs in the construction industry. By offering courses in diverse languages the TOE program will help spread Canada's cultural practices of building in wood to new markets. TOE will also support ongoing research and innovation by offering diverse perspectives from the international community and from within the diverse stakeholder interests in the building environment.

TOE is not an advocacy forum. Courses are intended to offer transparent information to students in the interest of improving, innovating, and expanding opportunities to build sustainably. TOE does not solicit funding from private industry or wood or forest advocacy groups in order to offer a balanced voice on the issues.

WHAT WE NEED.

TOE's success globally requires commitment from our government here at home. As with all funding, the first contributor propels others. We need Canada to support the program in 2018-2019 to seed the courses and program development that will ultimately bring on funding from other governments who share Canada and the program's ambitions.

We are asking the Canadian Government to support us with funding of 1.5 million dollars for 2018-2019 as a commitment to broadening education, jobs training, green innovation, green building and a tangible climate policy.

CONTACT

Please feel free to contact DBR Founder and Director for any information we can provide.

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Thank you.