

construction

in vancouver

Building a greener future



New benchmarks for energy efficiency are set to disrupt the B.C. building industry, posing fresh challenges for the development, design and construction sectors | B2

Built to Passive House standards, the Heights mixed-use development at Skeena and East Hastings streets is the type of high-performance, low-energy project the now-one-year-old Zero Emissions Building Exchange (ZEBx) is encouraging the construction industry to build. The Heights was designed by Cornerstone Architects for 8th Avenue Developments and built by Peak Construction | SUBMITTED

FINDit



CONSTRUCTIVE COMMENT B4

VRCA works to help industry prepare for the future



LEGAL SPECS B8

How to minimize legal risks stemming from LEED



ENVIRONMENT: Energy-efficiency standards set to disrupt sector B2

INNOVATION: Green tech rising B3

MILESTONES: ZEBx turns one B5

DESIGN: SFU building is living lab for sustainable energy engineering B6



TRAINING: BCIT's construction curriculum is bright green B7

EVENTS: BCIT, City of Vancouver to host Ecocity World Summit B7

CAREERS: VRCA outreach program educates youth B8

ENVIRONMENT: CLIMATE CHANGE, ENERGY-EFFICIENCY STANDARDS SET TO DISRUPT CONSTRUCTION INDUSTRY

By 2032, most of the walls, windows and mechanical systems used today will be obsolete

BY PETER CAULFIELD

In 12 years, nearly everything you build today will be obsolete. Are you ready?"

That was the attention-getting title of a presentation given by **Monte Paulsen**, a Passive House consultant and specialist in multi-unit residential buildings, at the **Vancouver Regional Construction Association's** recent Construction Leadership Forum in Whistler.

"The B.C. Energy Step Code is going to disrupt the construction industry," said Paulsen, an associate at **RDH Building Science Inc.** in Burnaby. "By 2032, most of the walls, windows and mechanical systems that architects and builders are familiar with today will be obsolete."

The B.C. Energy Step Code is a recent (2017) provincial standard that provides an incremental approach to achieving more energy-efficient buildings that go beyond the requirements of the base B.C. Building Code.

The Step Code does this by establishing a series of measurable, performance-based

energy-efficiency requirements for construction that builders can choose to build to and communities may choose to adopt in bylaws and policies.

The Passive House approach to meeting the Step Code is a rigorous standard for energy efficiency in a building to reduce its ecological footprint. It results in ultra-low-energy buildings that require little energy for space heating or cooling.

Applicable to almost any building type or design, the Passive House building standard is the only internationally recognized, proven, science-based energy standard in construction. Passive House certification ensures that designers and consultants are qualified to design buildings to meet the standard.

There are several benefits to building to Passive House standards. For example, it gives building occupants control over indoor air quality and temperature with simple-to-use and durable systems, making them quiet and comfortable in each of the four seasons. Reduced operating costs make up for any



Monte Paulsen, Passive House consultant: "there is still plenty of time to get ready, but the industry needs to start now" | SUBMITTED

additional construction costs, and the reduced carbon emissions give peace of mind.

Paulsen said that, although the construction industry is booming now, the ground beneath it is starting to shift because of climate change, as well as the steps governments are taking to adapt

to climate change and mitigate its effects, such as the **City of Vancouver's** Climate Emergency Response and the B.C. Energy Step Code.

"Radical changes in construction will be needed to reduce the greenhouse gas emissions connected directly and indirectly with construction," said Paulsen.

New buildings in southern B.C. will need to be sufficiently insulated to achieve ambitious thermal energy demand intensity and total energy use intensity limits.

"Buildings are the largest source of greenhouse gas emissions in Vancouver, and rank high in the province," he said. "The Step Code sets limits on total heat loss and total energy use in buildings."

In order to design buildings that meet those limits, architects will need to make big changes to their design processes, Paulsen said.

And builders will need to construct thicker walls, use triple-paned windows and insulated slab edges and install different mechanical systems.

"This is scary," Paulsen said. "More than in most industries, for many years the construction industry has resisted change. The industry has not faced disruption like this since the introduction of the elevator in the 19th century."

But don't despair, said Paulsen. "Those segments of the construction and design industries that are already building Passive House structures have been achieving excellent results on dozens of buildings in B.C.," he

The industry has not faced disruption like this since the introduction of the elevator in the 19th century

Monte Paulsen
Consultant, Passive House

said. "RDH [Building Science] alone is consulting on more than four million square feet of Passive House, including three highrises and a dozen mid-rise projects."

"There is still plenty of time to get ready, but the industry needs to start now. We need to change the way we build buildings."

To be ready for 2032, general and trade contractors should start taking training, and plenty of it, Paulsen said.

"Take Step Code training, Passive House training, and there are other programs, too. One of the best ways to learn is to choose a simple Passive House project and get to work now. That way, 2032 won't be scary when it comes around."

Paulsen said the international Passive House community, which is large and influential, especially in northern Europe, recognizes that Vancouver is a Passive House leader in the world, which makes this city unique.

"There are hundreds of Passive House consultants in B.C., dozens of Passive House buildings being built, and hundreds more are in process." ■

When Every Detail is Critical, Wales McLelland is the Easy Decision.

Cowell Auto Group
Richmond BC

Design Build
General Contracting
Construction Management

WM WALES
MCLELLAND
CONSTRUCTION

A TRUSTED PARTNER
SINCE 1971

For more information please call us at
604-638-1212 or visit our website at
www.walesmcllelland.com

construction

in vancouver

QUARTERLY CONSTRUCTION NEWS IN THE GREATER VANCOUVER REGION

To book space or
for answers
to your questions
please

call **604-688-2398** or
e-mail: **ads@biv.com**

INNOVATION: GROWING MARKET FORECAST FOR GREEN TECH

Market for high-performance building products worth \$3.3 billion

BY PETER CAULFIELD

Major changes to regional building standards, in the form of the **City of Vancouver's** Greenest City 2020 Action Plan and the B.C. Energy Step Code, will affect how Metro Vancouver builds in 2032.

Greenest City 2020 is intended to prepare Vancouver for the potential impacts of climate change and at the same time build a vibrant community, a thriving green economy and a greener, healthier city.

The B.C. Energy Step Code is a provincial standard that provides an incremental and consistent approach to achieving construction that uses energy more efficiently. It requires builders to demonstrate that buildings are compliant with the energy-efficiency requirements of the building code by modelling a structure's energy requirements.

The **Vancouver Economic Commission** (VEC) has been researching the size and depth of the market for green products and technologies that will enable this region, as well as other jurisdictions in Canada and the U.S., to make the transition to energy-efficient buildings.

According to a recent VEC report – *Green Buildings Market Forecast: Demand for Building Products, Metro Vancouver, 2019-2032* – changes such as Greenest City 2020 and the Step Code are creating a \$3.3 billion market for high-performance building products and technologies.

The report focused on six product categories: fenestration



George Benson, green building market acceleration consultant, Vancouver Economic Commission: “we need to all work together” to increase the number of local green builders and technology | SUBMITTED



Mike Battistel, president of Langley-based Cascadia Windows, which produces high-performance fenestration products, structural glazing and curtain walls | SUBMITTED

The Step Code is changing gradually, which gives entrepreneurs enough time to think outside the box and develop new products

Mike Battistel
President, Cascadia Windows

products, insulation products, heat recovery ventilators, HVAC equipment, domestic hot water and drain-water heat recovery.

B.C. currently imports many of the technologies, especially

mechanical equipment such as heat pumps and heat recovery ventilators, that are required for high-performance buildings.

According to the report, manufacturing such products in Metro Vancouver would support an average of 925 jobs every year between 2019 and 2032.

In addition, the installation of new “green” products and technologies would support an average of 770 installer positions in Metro Vancouver.

The report says demand for low-performance products, especially windows, will “evaporate” after 2022, while the call for high-performance systems will increase.

B.C. and Vancouver businesses

should act now to target markets with similar climates and advanced green building codes, such as the U.S. Pacific Northwest, as well as markets throughout North America, the report says.

Cascadia Windows Ltd. is taking advantage of these new market opportunities. The Langley company produces high-performance fenestration products, such as windows, skylights and doors, structural glazing and curtain walls.

“Our products enable B.C. contractors to meet modern building codes and buildings to operate more efficiently,” said **Mike Battistel**, president of Cascadia Windows. “Our extensive and integrated line of window and door products allows for greatly improved building performance without having to sacrifice any part of your design.”

Cascadia has a number of different product lines, including its Universal Series, an all-fibreglass system that features the latest in energy-efficient window and door technology; the adjustable Cascadia Clip fibreglass thermal spacer made of low-conductivity fibreglass, which reduces thermal bridging and improves the effective thermal resistance of exterior walls; and its fibreglass curtain wall vent adapter, which allows the thermally weakest part of curtain wall systems, the operable vents, to achieve excellent thermal performance by using a fibreglass sash and frame in place of aluminum.

“Most of our customers today are contractors in Oregon and Washington,” said Battistel. “In

the future, we expect the B.C. market to grow, especially in Vancouver. Our fibreglass windows and doors are more durable than plastic and just as strong as aluminum, so they can be used on large commercial projects.”

Battistel said now is the time for local producers to enter the market.

“The Step Code is changing gradually, which gives entrepreneurs enough time to think outside the box and develop new products.”

The VEC works with local organizations, such as **Passive House Canada**, the **Canada Green Building Council** and the **British Columbia Institute of Technology**, to increase the number of local green builders and technology suppliers and to help them become world leaders.

“We need to all work together to make it work,” said **George Benson**, a green building market acceleration consultant with VEC.

The commission is working to attract foreign direct investment from green building product and technology companies around the world.

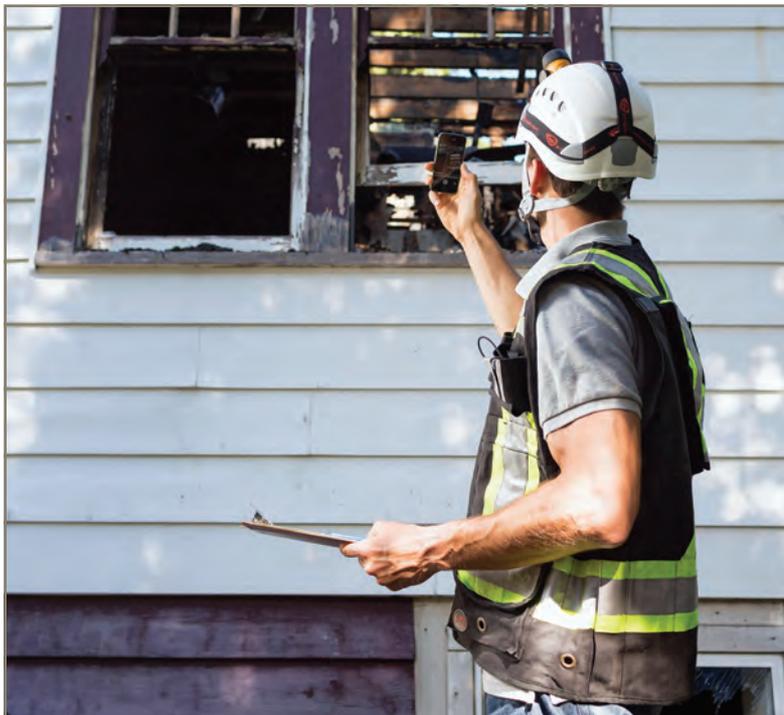
“Most of them appear to be in the U.S., Europe and Asia,” said Benson. “It’s a unique opportunity for them to set up here and work with local partners.”

VEC is also partnering with Vancouver software developer **Open**.

“Our data aggregation and analytics platforms provide building industry participants with the tools they need to shape a low-carbon future,” said **Donovan Woollard**, CEO of Open. ■

Restoration worksites: Know your responsibilities.

Ensure you have a system in place to coordinate all work activities to keep your workers healthy and safe.



Find resources at worksafebc.com/construction

WORK SAFE BC

In 12 years, what we build today will be obsolete. Are you ready?

The construction industry needs to change, and VRCA is working to ensure it is prepared for what lies ahead



Transformation that will disrupt B.C.'s construction industry in a way not seen in generations brings with it significant business opportunities



FRANCK BOSTON/SHUTTERSTOCK

BY FIONA FAMULAK

There are times when a single statement – maybe even a single sentence – changes our perspective. I experienced this in May when

our association hosted its annual Construction Leadership Forum in Whistler. **Monte Paulsen**, Passive House specialist with **RDH Building Science Inc.**, made the statement that “by 2032, every B.C. builder will face a simple choice: build like Passive House, or build somewhere else.” His statement caught my attention.

We know that the construction industry in British Columbia, and the Lower Mainland in particular, has some key milestones ahead, whether it be navigating the skilled labour shortage through 2021 and beyond, when demand for construction services is at an unprecedented level, or building to support Metro Vancouver’s projected population growth of one million newcomers by 2041.

However, Paulsen’s statement wasn’t directed at the supply of labour or population forecast. He was referencing the process of construction and, specifically, the need for all new residential and commercial buildings in Vancouver to be built to zero-emissions standards by 2030, and for all new buildings in B.C. to be net-zero-energy ready by 2032.

Such milestones require the construction industry to build faster, greener and more productively than ever before. Building “greener” includes the need to adapt to new, high-performance building standards. What I hadn’t fully acknowledged until that moment in Whistler is the risk of not adapting to those standards – the risk that a company might find itself out of business if it doesn’t change.

While the pace and scale of B.C.’s construction market transformation is daunting, it has several positive qualities.

First, the provincial government’s BC Energy Step Code and the City of Vancouver’s Greenest City 2020 Action Plan provide a clear road map of code changes and their timing. There’s no need to guess what’s required and when. What’s more, the policies will help to catalyze construction innovation in an industry that is ripe for change.

Second, the City of Vancouver, recognizing that the industry needs help to meet the city’s 2030 milestone (and 2025 stretch milestone), seed-funded our Zero Emissions Building Exchange (ZEBx), the first and only in Canada, for the purposes of expediting understanding of and capacity to build to zero-emissions standards. ZEBx recently celebrated its first year of operation and has already cemented its place in the industry as the go-to resource for zero-emissions building advice.

Third, the market transformation that will disrupt B.C.’s construction industry in a way not seen in generations brings with it significant business opportunities. A recent research study – *Green Buildings Market Forecast: Demand for Building Products, Metro Vancouver, 2019-2032* – published by the **Vancouver Economic Commission** reports that local and provincial zero-emissions and net-zero-energy-ready building policies are creating a \$3.3 billion market for high-performance building products and technologies in Metro Vancouver alone.

Understanding the urgency to change and the business opportunities associated with that change informed the editorial theme of this edition of *Constructive Comment in Vancouver*, where we examine why the industry needs to adapt and the steps it can take.

And the market transformation is not restricted to the development, design and contracting communities. Our post-secondary institutes have a key role to help build the workforce of tomorrow, preparing students to fill roles – some of which do not yet exist – that will be required in response to the industry’s growing need for clean tech, digitization, data management and analysis, advanced manufacturing and robotics. In that context, **Simon Fraser University** is launching its new Sustainable Energy Engineering program this fall, while the **British Columbia Institute of Technology** is continually updating the curriculum offered by its School of Construction and the Environment.

The **Vancouver Regional Construction Association’s** (VRCA) board of directors anticipated significant and fast-paced industry change when it set the strategic direction for our association in 2017. It identified that excellence, underpinned by a culture of learning and innovation, is a critical factor for the survival and prosperity of VRCA’s members and B.C.’s construction industry as a whole. Our vision is clear. Our foundation is strong. And our commitment to serving members is unwavering.

In 12 years’ time, what we build today will be obsolete. Our industry therefore needs to change. In collaboration with its many industry partners, VRCA is actively working to help ensure the development, design and construction communities are ready for what lies ahead. ■

Fiona Famulak is president of the Vancouver Regional Construction Association.

SYNCRA
CONSTRUCTION

WE SHARE OUR EXPERIENCE.
WE DELIVER DYNAMIC SOLUTIONS.
WE BUILD STRONG RELATIONSHIPS.



English Bay Residences, Vancouver
Completed May 2019
Architect: DA Architects + Planners

syncraconstruction.com

MILESTONES: ZERO EMISSIONS BUILDING EXCHANGE TURNS ONE

ZEBx is strengthening the public, private and civic capacity to deliver zero-emissions buildings

BY PETER CAULFIELD

The Vancouver Zero Emissions Building Exchange (ZEBx), a collaborative platform for strengthening the public, private and civic capacities to deliver zero-emissions buildings, opened its doors one year ago, in July 2018.

ZEBx was established to help industry deliver the City of Vancouver's Zero Emissions Building Plan, which aims to reduce thermal energy demand and greenhouse gas emissions intensity in new buildings. It is hosted by the Vancouver Regional Construction Association (VRCA).

The first 12 months of ZEBx have been busy, said executive director **Christian Cianfrone**. In the last year it organized 60 industry events with the help of **Passive House Canada**, one of its delivery partners.

ZEBx organized a tour of Brussels, Belgium, the global leader in high-performance buildings.

It built four window-wall mock-ups, housed in the **British Columbia Institute of Technology** High Performance Building Lab, to show how highrise residential buildings can meet the next generation of net-zero or



Christian Cianfrone, executive director of the Zero Emissions Building Exchange: "experience has proven that those who are most forthcoming in sharing their knowledge have benefited from their position of leadership" | SUBMITTED

net-zero-ready standards.

And it helped launch the Women4Climate mentorship program in Vancouver.

Later this year, ZEBx will be convening a new provincial heat-pump coalition to co-ordinate and advance activities in that space.

"Collaboration is essential if we are to rapidly advance solutions towards our goal," said Cianfrone. "Experience has proven that

those who are most forthcoming in sharing their knowledge have benefited from their position of leadership, attracting not only more business but also staff and recognition."

ZEBx is a partnership of four parent organizations: the City of Vancouver, VRCA, Passive House Canada and the **Open Green Building Society**.

Although ZEBx is new, it is already delivering benefit to VRCA members, said association president **Fiona Famulak**.

"VRCA's strategic plan is built around the association's commitment to educate, advocate and facilitate connections across industry," said Famulak. "As host of ZEBx, we understand why our industry needs to build to zero-emissions building standards. Given our reach, we are able to connect directly with our general and trade contractors, manufacturers and suppliers from across industry, communicate why change is necessary and help them prepare for the future."

Sean Pander, manager of the City of Vancouver's green building program, said ZEBx is an important asset to the city.

"New requirements for emission reductions from buildings cannot

be introduced if industry lacks the confidence or the capacity to meet them," said Pander. "By investing in an organization [ZEBx] that can identify private-sector leaders and then create platforms for them to share their successes and challenges, the city builds industry capacity and enthusiasm for highly efficient buildings that use only renewable energy. It's a key action for implementing our Zero Emissions Building Plan."

Pander said Vancouver has benefited from ZEBx in a number of ways.

"There is rapidly growing private-sector interest and confidence in zero-emission building. There are 54 building projects that are voluntarily pursuing Passive House or other zero-emission construction standards that have been recently completed or are moving through city permitting processes."

The projects include more than 2,000 houses, apartments or condo units representing over two million square feet of residential development. And many of these voluntary early leader projects are for new rental buildings.

Rob Bernhardt, CEO of Passive House Canada, said the organization has three of its staff located at

ZEBx. They work collaboratively with all ZEBx partners to advance building performance through events, education and other capacity-building activities.

"As a membership-based not-for-profit, the primary benefit we receive is a more rapid realization of our mandate," said Bernhardt. "The mandate of Passive House Canada is market transformation. We have observed the effectiveness of centres of excellence, such as ZEBx, in achieving the required transformation in other markets, such as Brussels and New York, and have long supported them."

Passive House Canada has benefited in a number of ways from ZEBx in the past year.

"The additional staff resources, events and communications that ZEBx offers have significantly increased the capacity of local industry leaders to advance building performance across the region," said Bernhardt. "Participation in courses and events has increased substantially. Most importantly, the rising number of high-performance Passive House buildings being designed and built places Vancouver at the forefront [of construction industry transformation]." ■



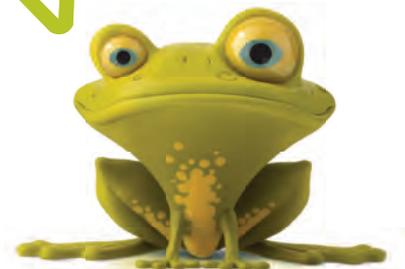
Energy at work  FORTIS BC™

We've got **Rebates**

On high-efficiency space and water heating systems, plus custom programs to help you build for better energy performance.*

That's energy at work.

Start saving at fortisbc.com/businessrebates



DESIGN: NEW SFU BUILDING A LIVING SUSTAINABILITY LAB

Expansion to Surrey campus is a LEED Gold candidate and showcase for energy efficiency



With its award-winning facade designed to look like circuit board imagery, Simon Fraser University's new Sustainable Energy Engineering building will house a unique program starting in September to prepare students for jobs in the clean-tech sector | SUBMITTED

BY BRIGITTE PETERSEN

Simon Fraser University's (SFU) latest expansion to its Surrey Centre campus will be home to a new Sustainable Energy Engineering (SEE) program launching this September.

The \$126 million building, located on University Drive beside the existing campus, was designed as a living showcase for sustainable building standards. A LEED (Leadership in Energy and Environmental Design) Gold candidate, the five-storey, 20,458-square-metre facility features energy-efficient systems for air handling, including a system to monitor and ensure laboratory air quality while reducing ventilation and HVAC energy loads by about 50%, the first of its kind in B.C. It also has efficient water heating, cooling and energy-recovery systems.

"The SEE building will immerse students in a learning environment that includes many of the concepts, materials, techniques and systems that they will be studying," said **Kevin Oldknow**, program director and associate dean of SFU's faculty of applied sciences. "Students and researchers will have access to a rich set of data produced by the building management systems, allowing the building's various systems and performance over time to be woven into the

educational experience and research projects."

The building, part of the first phase of a three-phase expansion, offers 440 new full-time-equivalent student spaces, including 320 undergraduate and 120 graduate, and supports SFU's Mechatronic Systems Engineering program with room for research and student entrepreneurship through the university's Technology Entrepreneurship@SFU program.

Designed by **Revery Architecture Inc.**, formerly Bing Thom Architects, and built by **Bird Construction**, the building features teaching labs, an open atrium and a 400-seat theatre. Federal and provincial governments each provided \$45 million toward the new facility.

Its facade, designed to represent circuit board imagery, won a national industry award in 2018 when Revery received the **Canadian Precast Prestressed Concrete Institute's** Roy Willwerth Architectural Recognition Award for its original use of precast concrete.

The facade features alternating strips of energy-efficient, undulating framed precast concrete panels and reflective glass. Duncan, B.C.-based **Surespan Structures** supplied more than 300 panels, and Mexican white cement and white sand from Ontario were also used. Prefabricating the precast panels off-site helped

to ease and speed up installation while minimizing on-site debris and noise.

Offered by SFU's faculty of applied sciences, SEE will be an interdisciplinary program and a first for Western Canada. Students will learn skills and gain experience to work in B.C.'s growing clean-tech sector, including in the areas of renewable energy, sustainable manufacturing, clean power generation, and sustainable food and water solutions.

Job opportunities for SEE graduates include professions in heating, ventilation and air conditioning as well as in energy systems for commercial and residential buildings. They could also work as consultants or entrepreneurs or pursue higher education and research positions. SEE sectors include wind, solar, geothermal, hydroelectric power, fuel cell, gas turbine, biomass, transportation, manufacturing, and oil and natural gas.

Oldknow said the SEE program was developed in response to a growing demand for engineers ready to take up new challenges in the clean-tech sector.

"Before designing the program, we surveyed clean-tech companies across Canada and found that approximately 50% had a need for graduates with a different kind of engineering education," he explained.

Interdisciplinary training is



Kevin Oldknow, director of SFU's Sustainable Energy Engineering program | SUBMITTED

The SEE building will immerse students in a learning environment that includes many of the concepts, materials, techniques and systems that they will be studying

Kevin Oldknow

Director, Sustainable Energy Engineering program, Simon Fraser University

Invest BC website, the future of the clean-tech industry looks bright. There are currently about 270 clean-tech companies in B.C., more than 25% of Canada's total. Seven of these companies are listed on the 2019 Global Cleantech 100 ranking of the world's most innovative and promising firms. Based on **KPMG's** 2017 *BC Cleantech Report Card*, about 8,500 people, or more than 7% of B.C.'s tech-educated workforce, are employed in the sector, which has one of the highest growth rates in Canada.

"The creation of the new Zero Emissions Building Exchange as a centre of excellence right here in Vancouver is one more clear indicator that B.C. is on a trajectory to be a hub of innovation, activity and growth," said Oldknow. ■

important, according to Oldknow, for students to understand the ways sustainable energy solutions depend on ecology, the environment, economics, policy and legislative frameworks and culture.

Motivated by the **City of Vancouver's** Zero Emissions Building Plan and the province's CleanBC plan, construction of emissions-free buildings will result in new challenges requiring employees with a wide range of skills, according to Oldknow, a demand the SEE program plans to address.

According to the **Trade and**

TRAINING: BCIT'S CONSTRUCTION CURRICULUM IS BRIGHT GREEN

School of Construction and the Environment focuses on both natural and built environments

BY PETER CAULFIELD

The British Columbia Institute of Technology (BCIT) School of Construction and the Environment promises “sustainability for a complex world.”

As the leading contributor of trades, engineering and applied and natural sciences professionals in British Columbia, the school is concerned with the natural environment, the built environment and the relationship between the two.

For example, the school's Learning Centre for Zero Energy Buildings was created to help the construction industry make the transition to the latest energy-efficient building codes, says **Alexandre Hebert**, manager of the centre.

The provincial government created the B.C. Energy Step Code to make buildings net-zero-energy ready by 2032. The code provides an incremental approach to achieving more energy-efficient buildings that go beyond the requirements of the current B.C. Building Code. The **City of Vancouver** is also leading the way with its Zero Emissions Building Plan.

The learning centre's suite of short courses was created for trades and non-trades construction professionals who are looking for hands-on training to upgrade their skills and meet the new building codes.

The School of Construction and



Alexandre Hebert,
manager of the Learning
Centre for Zero Energy
Buildings at BCIT's School
of Construction and the
Environment | SUBMITTED

the Environment has adopted a sustainability framework for all educational programs, research and operational activities. One of the elements of this framework is the Factor Four initiative.

Factor Four is based on the goal of resource productivity, or getting the most from the resources we use.

The school is aiming for a 75%, or fourfold, reduction in energy and materials consumption in several of its buildings on the BCIT campus. The goal is to find out if a fourfold reduction in materials and energy use can be achieved without compromising campus service levels, such as building occupant health and



Wayne Hand, dean of the
School of Construction
and the Environment at
BCIT | SUBMITTED

comfort and educational program delivery.

The Factor Four area at BCIT contains six buildings that are intense energy and material users and represent the entire range of building types – industrial, commercial and residential.

Wayne Hand, dean of the School of Construction and the Environment, says the school has 7,000 full-time and 6,000 part-time students in trades and technology degree and career advancement programs.

The school offers more than 270 part-time courses and 60 different full-time programs in applied and natural sciences, engineering and technical areas, and in trades

and apprenticeship.

“Most programs are delivered on the main Burnaby campus, but there are some satellite programs delivered at high schools around the province,” said Hand. “In addition, we offer service programs that are delivered to industry clients on-site.”

The school is also home to the High Performance Building Lab. Developed in partnership with **BC Housing** and **BC Hydro**, the lab provides hands-on training in zero-emissions buildings.

New requirements for energy-efficient housing and buildings require changes to existing building envelope design and construction techniques. Hand says construction technologists, designers and builders need to become familiar with building envelope application technologies and energy-efficient envelope systems.

The Centre for Architectural Ecology, a School of Construction and the Environment research centre, is host to collaborations in living architecture, acoustics and building science. While the centre's initial research established how green roofs perform in the damp climate of coastal B.C., much additional research has taken place since then. For example, the centre is currently investigating the extent to which green roofs serve a city's ecological health and well-being.

The Building Science Centre of Excellence, meanwhile, provides

advanced research and educational support to the construction industry in several areas. It has developed a building optimization and decision-making software tool that integrates whole-building simulations, risk assessment and cost-benefit analysis.

The software can help design a building that is energy efficient, durable, economical and environmentally friendly while providing occupants with comfortable and healthy air to breathe.

BCIT's electrical department has approximately 2,250 full- and part-time students, according to **Clarence Burlock**, an electrical trades instructor. The department offers the post-apprenticeship Advanced Certificate in Renewable Energy Electrical Systems Installation and Maintenance program, which provides hands-on, practical training that uses equipment typically encountered in the renewable energy industry.

Burlock says the program will appeal to learners who enjoy change and new technology and want to seize the opportunity to take positive action to ensure an improved future environment.

Looking to the future, BCIT has launched its Inspire campaign to raise \$125 million toward a \$450 million renewal plan. The plan's goal is to refresh infrastructure and education that will meet the needs of employers in key economic sectors for BCIT's next 50 years. ■

EVENTS: BCIT, CITY OF VANCOUVER TO HOST ECOCITY SUMMIT

More than 1,000 delegates from around the world will share knowledge on ecological and sustainable city designs

Ecocity World Summit 2019 is coming to Vancouver October 7-11, co-hosted by the **British Columbia Institute of Technology (BCIT)** and the **City of Vancouver**. Vancouver Mayor **Kennedy Stewart** and a host of local, regional and global experts will converge at the Vancouver Convention Centre to “build the bridge to socially just and ecologically sustainable cities,” according to the event's website. The biennial summit will welcome more than 1,000 delegates from around the world.

“Vancouver is thrilled to host Ecocity World Summit 2019 and showcase our leadership in resilience and inclusive city-building as we pursue the goal of being the city that works for everyone,” said Stewart. “Ecocity 2019 sets the stage for the kind of city we need to build: one that is economically vibrant, environmentally sustainable and socially just. The City of Vancouver looks forward to hosting

summit attendees and facilitating important conversations around the conference's theme, ‘Socially Just and Ecologically Sustainable Cities.’”

“BCIT is delighted to welcome the world to Vancouver for the Ecocity World Summit in 2019,” said **Kathy Kinloch**, president of BCIT. “For over 50 years, BCIT has been empowering our students to embrace change and innovate through sustainability. Now, more than ever, we must challenge ourselves, our communities and our future leaders to inspire global progress through constructing and reimagining cities that are in balance with nature.”

The first Ecocity World Summit was held in Berkeley, California, in 1990 with the purpose of bringing together bright minds to share knowledge on ecological and sustainable city designs. The non-profit **Ecocity Builders** has since been convening summits in different locations around the



ECOCITY
WORLD SUMMIT 2019
VANCOUVER • CANADA

globe, such as Abu Dhabi, United Arab Emirates, in 2015, and Melbourne, Australia, in 2017.

The BCIT School of Construction and the Environment will be taking the lead to convene the summit program. With more than 240 presentations and workshops with leading experts, the event will provide a platform for the discovery of inspiring and innovative ideas and strategies. Keynote speakers will address solutions for sustainable development, urban redesign, reflections on Vancouver's Greenest City 2020 plan,

scaling ecological restoration and more.

The summit sessions will focus on the Ecocity framework of 18 standards in four broad categories – urban design, biogeophysical conditions, socio-cultural features and ecological imperatives – and will share tips and tools for building capacity, energy efficiency and optimization. Attendees will also learn about re-sourcing materials for new uses and innovative ways to reduce carbon footprint with responsible materials.

For attendees in the development sector, the green buildings stream of urban design will be a must-see, as experts discuss ideas to help guide building development that represents an important part of environmental and social stewardship – essential to building cities in balance with nature.

The summit is made possible with the support of many sponsors, academic partners and strategic partners, including **Stantec**, **Urban Solar**, **DIRTT/Innovior**, **Vancouver Airport Authority**, **EllisDon**, **Dialog**, **BC Hydro**, **Polytechnics Canada**, **Real Estate Foundation of BC**, **Perkins+Will Canada**, **B+H**, **Concert Properties**, **UN-Habitat**, **United Nations Environment Program**, **Vancity**, **Canada Green Building Council**, **GBCI Canada**, **Vancouver Regional Construction Association** and **Recycling Council of BC**.

To register for the summit or view the event program, visit ecocity2019.com. ■

The legal risks of green innovation in design and construction

LEED-related litigation has so far not been excessive, but industry participants should be on guard



BY NORM STREU AND
CHRISTOPHER HIRST

The LEED juggernaut continues to take over the world of design, construction and development.

Leadership in Energy and Environmental Design (LEED) is a widely popular green building certification program. What began with a committee of six volunteers has grown to 120,000 staff, volunteers and professionals, applying standards to 85,000 certified projects worldwide, covering some 14 billion square feet of construction. Given the vast scope of LEED, associated litigation in the U.S. and Canada has so far not been excessive. However, LEED does create substantial potential for disputes, and industry participants are well advised to keep such risks top of mind when approaching LEED projects.

The LEED system provides for four possible levels of certification: LEED Certified, Silver, Gold and Platinum. The certification level achieved is based upon a project or a building scoring a minimum threshold of possible points that are obtained by meeting certain specified prerequisites. The actual ability of a project or a building to achieve a desired LEED certification is not certain at the time of design.

Certification at a particular level will depend on a number of factors, including the design and materials used, the skill of the contractors and the quality of the supporting documentation.

Here are five ways in which LEED creates new project risk:

1. New technologies are being used, and old methods are being used in new ways. This creates new liability risks, as we do not have the same engineering data to ensure these technologies and methods will not give rise to unforeseen problems. In other words, unforeseen risks may be created by designing buildings using different products and by using new methods that are designed to make the buildings more efficient.

2. A developer that promises a certain level of green certification that is subsequently not achieved may have exposure to misrepresentation claims. In the U.S. case of *Keefe vs. Base Village Owner*, condominium owners brought suit against the developer, alleging among other things that the building did not meet the LEED standard promised. In that case, the owners argued they were entitled to rescission of their purchase contracts. In *Gidumal vs. Site 16/17 Development LLC et al.* (2010, New York), a lawsuit was filed based on the failure of a development in

Battery Park City to meet LEED standards. Though the building was built to LEED Gold standards, occupants argued that issues including cold drafts and heating problems indicated that the building did not meet the standard advertised.

3. A developer that retains its own LEED consultant will bear the risk of the recommendations of this consultant. For instance, if the recommendations of the consultant during construction result in increased costs, questionable-quality materials or construction delays, the owner may well end up defending contractor claims for additional compensation resulting from such recommendations.

4. Architects and other design professionals may also face exposure in the LEED process. Given that the ultimate LEED certification cannot always be predicted in advance, architects who contractually commit to a certification level that is not achieved at completion may face claims from their clients as a result. An additional risk faced by such design professionals is the extent to which such claims may be covered by their errors and omissions insurance policies.

5. Finally, general and trade contractors may face exposure to claims if they fail to take the steps agreed to in the LEED

process and the owner suffers damages from the loss of a promised LEED certification. If a developer is counting on a certain level of LEED certification and the level is missed because of some act or omission in construction, you can expect that developer to bring a claim for loss of profits.

As with most risk in the design and construction process, the best way to minimize exposure to LEED risk is through careful consideration at the outset of a project as to the allocation of risks associated with LEED compliance. Careful contractual allocations of risk and well-drafted clauses minimizing LEED responsibility should be your first line of defence. You should also consult your insurance broker to ensure that your organization is insured with respect to the risks associated with LEED compliance. Fortunately, there has not yet been extensive LEED litigation, but that does not mean you should lower your guard to the inherent risks associated with the LEED certification program. ■

Norm Streu is president and chief operating officer of the LMS Reinforcing Steel Group. Christopher Hirst is managing partner and leader of the construction and engineering group at Alexander Holburn Beaudin + Lang LLP.

Careful contractual allocations of risk and well-drafted clauses minimizing LEED responsibility should be your first line of defence

CAREERS: VRCA OUTREACH PROGRAM EDUCATES YOUTH

Volunteer-led initiative has engaged more than 5,500 students from 21 schools

BY DAVID WEIR

It is ironic that, for an industry that relies on innovation, new technologies and best-practice procedures, construction struggles to attract young talent. Currently in the throes of a skilled labour shortage that, according to **BuildForce Canada**, is forecast to be as many as 25,000 unfilled construction jobs across B.C. by 2028 (and 12,100 unfilled jobs in the Lower Mainland by 2021), the industry attracts only one in 45 high school graduates into its construction trades programs.

The increasingly globalized and competitive business environment, tight labour market and advances in knowledge and technology are creating new pressures for construction companies to innovate, differentiate, improve their reputations and attract the next generation of talent. Added pressure comes in the form of some deep-rooted myths that must be countered with facts if the industry is to improve the one-in-45 ratio and attract young talent in the future. Those myths include:

Myth No. 1: A career in construction is a “second-best” choice compared with one that requires a university degree.

The industry does a poor job at promoting itself. While working in bad weather on site is inevitable for some, our industry is far more sophisticated and reliant on technology to drive innovation and productivity than is perhaps understood. In fact, trades professionals today require excellence in math, physics and technology to install state-of-the-art mechanical and electrical systems, operate equipment and keep multimillion-dollar projects on track.

Myth No. 2: The construction industry offers a limited career path.

Our industry is multi-faceted and allows apprentices to pursue their chosen trade for life or to be entrepreneurial and own their own business as early as their mid-30s. A skilled trades professional can climb the corporate ladder toward a senior executive position and/or pursue rewarding career opportunities across



Volunteers with VRCA's school outreach program talk to students about careers in construction | VRCA

the country or the world.

Myth No. 3: A career in construction doesn't pay well.

The industry is full of good-paying jobs. The average annual salary of a B.C. construction worker is \$61,202. Compare that with the average student debt in B.C. after a four-year degree of \$35,000, the highest in Canada, and it's easy to see the math works.

Today's youth have an essential role to play in the future of the construction industry, not only to fill the 2028 projected shortfall but also to help the industry be technologically smart,

innovative, productive and competitive at home and overseas.

It's why, in late 2015, the **Vancouver Regional Construction Association (VRCA)** engaged counsellors and students from schools across the Lower Mainland to identify ways in which we can work together to promote construction as an attractive and viable career path.

Those conversations gave rise to our school outreach program, a volunteer-led initiative designed to help educate youth about the opportunities associated with a career in construction. Four years later, and with the help of counsellors, teachers and 90

volunteers – many of whom are tradeswomen and female project managers and estimators – we have engaged 5,666 students from 21 schools. We've also collected some interesting data: 33% of students polled before a presentation said they would consider a career in construction. When the question was asked again post-presentation, approximately one-third of those who initially said “No” or “Maybe” now said they wanted to learn more.

While our school outreach program will not resolve the skilled labour shortage immediately, we are heartened by its early results and believe it has the potential to reduce the forecasted shortage in the years to come. It's why VRCA is now in the preliminary stages of evolving the program to have greater impact and debunk the myths about careers in construction once and for all, so that the industry is recognized as an employer of choice, keen to attract a diverse, skilled and tech-savvy workforce. ■

David Weir is manager, industry and government relations, at the Vancouver Regional Construction Association.