

# INNOVATION

## ENGINEERING MEETS PUBLIC ART

HOW A BC COMPANY RELIES  
ON ENGINEERING FOR ITS  
ART INSTALLATIONS

RESEARCHING A  
CARBON-NEGATIVE  
FUTURE

MITIGATING  
WILDLAND-URBAN  
INTERFACE FIRES



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*Princeton Grasslands - MapleCross Meadow, Princeton, BC. Photo by Graham Osborne*



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### ON THE COVER

*Crossroads*, by artist Julian Hou, is a collection of stained glass panels, the framing system of which was designed and installed by Area 58 Innovations at a Solterra residential condo in Burnaby, BC. PHOTO: CHRIS HAWLEY

## < COVER STORY

### ENGINEERING MEETS PUBLIC ART

A BC company designs and renders big and bold fabricated works of public art—but needs engineering help to make it happen.



### MITIGATING WILDLAND-INTERFACE FIRES AND ENGINEERING DESIGN

With so much of BC's urban infrastructure located in close proximity to forested areas, engineering design is playing a growing role in mitigating wildland-urban interface fires.



### ▲ PAVING THE WAY FOR A CARBON-NEGATIVE FUTURE

A new bioenergy facility at UBC, created and run by BC engineers, is finding new and clever pathways toward a carbon-negative future.



THIS DIGITAL EDITION OF *INNOVATION* INCLUDES VIDEO EXTRAS. LOOK FOR THIS PLAY ICON, AND CLICK ON IT TO VIEW VIDEO AND OTHER MULTIMEDIA CONTENT. AN INTERNET CONNECTION IS REQUIRED.



**ENGINEERS &  
GEOSCIENTISTS**  
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## A CONTINUING EDUCATION APPROACH SHAPED BY REGISTRANTS

Engineering and geoscience are constantly evolving professions—perhaps more so than ever before, with advances in technology, new areas of practice, and significant climate events bringing forward new challenges every day. Staying current through continuing education is essential to meeting the primary duty of our professions: protecting the public and the environment.

With the introduction of the *Professional Governance Act*, BC registrants are transitioning to a new model for Continuing Education (CE) that focuses on flexibility, accessibility, and supporting the diversity of our registrants. It establishes a strong foundation for accountability to the public and aligns our professions with the many others that have adopted mandatory continuing education for their registrants.

But for me, one of the most significant elements of our new program is the fact that it was shaped by you—BC engineers and geoscientists.

Several years ago, anticipating that ongoing education would take greater prominence under the new *Act*, Engineers and Geoscientists BC asked its CE Advisory Group (comprised exclusively of registrants) to create a framework and seek your views about what was most important to you in a mandatory program. Today, our program includes many elements that registrants asked for.

The CE Advisory Group said that registrants wanted the program to be highly accessible and flexible. And it is: the activities that contribute to your competence and relate to your area of practice—like conferences, webinars, volunteering, and mentoring—can also qualify for CE Hours. Engineers and Geoscientists BC also provides additional learning opportunities, many of them free of charge. The key objective of the CE Program is ensuring that the activities you undertake help to strengthen your competence and relates to your area of practice. How you learn is up to you.

Continuing education is a hallmark of strong professions. Through your feedback and influence, we believe we've created a CE Program that is streamlined and straightforward—and one that makes obligations easy to meet for registrants, but also helps us strengthen public trust in the professions.

To meet your first-year obligations, I encourage you to view the Four Requirements provided on Page 20. To learn more about the CE Program, visit [egbc.ca/Continuing-Education](http://egbc.ca/Continuing-Education).

Carol Park, P.Eng., President  
[president@egbc.ca](mailto:president@egbc.ca)

# INNOVATION

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## ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA

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Letters to the editor containing your views on topics of interest are encouraged. Opinions expressed in letters are not necessarily endorsed by Engineers and Geoscientists BC. Letters should be 300 words or less and can be emailed to [innovation@egbc.ca](mailto:innovation@egbc.ca). Find information at [egbc.ca/Submitting-to-Innovation](http://egbc.ca/Submitting-to-Innovation).

## ONE ENGINEERS AND GEOSCIENTISTS BC PAST PRESIDENT ACKNOWLEDGES PASSING OF ANOTHER

Engineers and Geoscientists BC Past President Philip (Phil) Sunderland, P.Eng., passed away on December 25, 2021. Mr. Sunderland had a lengthy and impactful volunteer history with Engineers and Geoscientists BC that spanned several decades. I had the pleasure of serving on Council during his term as President in 1999/2000. Phil volunteered on a variety of committees and panels throughout the years including Council, The Discipline Committee, The Executive Committee,

The Nominating Committee, the Governance Task Force, the Professional Practice Advisory Group, the Registration Interview Panel, the Technical Reviewer Committee, and most recently on the Fairness Panel.

Phil had a very clear moral compass when it came to ethical and moral issues. I always appreciated his ability to bring decisions back to those underlying principles. Our professions have really benefitted from his years of dedication and service. He will be missed!

*John Watson, P.Eng., FEC, FGC (Hon.)*

*2001/2002 President, Engineers and Geoscientists BC*

## REGISTRANT CONTEMPLATES FUTURE STANDARDS FOR FLOOD PROTECTION

I read with interest the comments made by John van der Eerden, P.Eng., [*Innovation*, January/February 2022] regarding the use of the return period as the basis for design. I agree and would go further: the use of return period provides a false sense of security. As John indicated, the return period ( $T_r$ ) is the inverse of the probability ( $P$ ) of an event being equaled or exceeded in any single year. Very simply put,  $P = (1/T_r)$ . The public generally believes that the number of years expressed is the amount of time that must pass before the next big flood. Unfortunately, this is not true. The standards used in BC are based upon the probability of being exceeded in any given year, yet we have infrastructure that is generally expected to have a useful life of many decades. Perhaps it would be better to have a design standard that acknowledges the useful life of the infrastructure when considering flood risk.

Just as there is a very simple equation that can be used to estimate the probability ( $P$ ) of any flood of a given size ( $T_r$ ) in any given year, there is an almost equally simple equation that can estimate the probability of that same flood occurring within any continuous period of years ( $N$ ). This equation can be stated as:

$$P = 1 - \left[ 1 - \left( 1 - \frac{1}{T_r} \right)^N \right]$$

An example using this equation would apply to a road culvert designed with a capacity of the 25-year return period and a useful life of 30 years. What then is the probability ( $P$ ) of a flood exceeding the capacity if the culvert when we have  $T_r = 25$  and  $N=30$ ? The probability of exceeding the capacity of the culvert is 0.71, or 71 percent. In terms of risk, there is a very high probability that a flood would exceed the culvert capacity and possibly lead to the road overtopping/washing out.

The next question might be what return period ( $T_r$ ) design standard would be required to reduce the probability ( $P$ )

to 0.1 (or 10 percent) during the time period ( $N$ ) of 30 years. Solving for  $T_r$ , we see the design standard required is a  $T_r$  of 285 years. And all of this without factoring in the effects of climate change.

Given this simple example I believe that we need to reevaluate the flood risks associated with drainage infrastructure and to have a discussion of the inherent risks in the present standards being applied when providing flood protection.

*Jim Dumont, P.Eng.*

## CORRECTION

The January/February edition of *Innovation Magazine* stated that Council updated its remuneration policy to ensure that elected and appointed councillors were consistently remunerated. *Innovation* incorrectly stated that *elected* councillors are compensated according to Treasury Board directives, when in fact it should have stated that *appointed* councillors are compensated according to Treasury Board directives. The error was corrected in the digital edition of *Innovation*.

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Details for the Scholarship Application are contained at [www.aaceibc.org](http://www.aaceibc.org).

The next scholarship application deadline is June 15, 2022 for the Fall Term.

The BC Section of the AACEi is a group of passionate cost professionals. We organize and lead networking and professional development seminars.



## ANNUAL REPORTING COMING SOON; NEW OPTIONAL SELF-IDENTIFICATION QUESTIONS ADDED

Under the *Professional Governance Act*, registrants are required to verify contact and certain practice-related information, and report on continuing education annually. Beginning this year, registrants will also have the opportunity to complete a number of self-identification questions during annual reporting. New applicants will be able to complete the questions after completing the application process.

Engineers and Geoscientists BC recognizes the importance of fostering professions that reflect and welcome the diverse members of our society and enable our registrants to contribute to their full potential. The purpose of the self-identification questions is to collect information to help us report and measure the success of equity, diversity, and inclusion initiatives (EDI), and identify new measures actions that will help achieve greater EDI within the professions.

The questions focus on broad categories of self-identity and were developed after extensive research and consultation. Responses to these questions are optional, and registrants will also have the opportunity to update or revise their responses if their information or comfort level with disclosure changes.

Registrants' data will be collected, used, and stored in accordance with the *Freedom of Information and Protection of Privacy Act*. Registrants' optional self-identification data will never be published. Rather, aggregate data may be

used to improve future programs, or for the creation of summary reports that provide information on the diversity demographics of our registrant population.

For questions about the collection of this information, contact [diversity@egbc.ca](mailto:diversity@egbc.ca).

### FREQUENTLY ASKED QUESTIONS

#### Why is Engineers and Geoscientists BC collecting this information?

Engineers and Geoscientists BC is collecting self-identification data to better understand demographic trends, identify barriers that some groups may face entering and remaining in the professions, and develop or update programs and initiatives to promote equity, diversity, and inclusion in the engineering and geoscience professions.

#### What if I don't want to complete the self-identification questions?

Completing the self-identification questions is optional. If you do not want to participate, select "I prefer not to disclose." Doing so will not impact your annual reporting or your registration with Engineers and Geoscientists BC.

#### How will my data be stored?

The self-identification data will be recorded with your existing registration information. By connecting this data to your existing information, we can perform a more meaningful analysis of the data, correlating the information with other registrant information such as practice discipline, geographic region, and practising status.

#### How will my data be used?

Your data will be collected, used, and stored in accordance with the *Freedom of Information and Protection of Privacy Act*. Registrants' optional self-identification data will never be published.

#### Who will have access to this information?

Optional self-identification data will not be accessible to, or viewable by, anyone other than designated staff who hold senior responsibility for equity, diversity, and inclusion programs and initiatives at Engineers and Geoscientists BC.



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## UPCOMING REQUIREMENTS FOR THE PERMIT TO PRACTICE PROGRAM

The Permit to Practice Program has been in effect since July 2, 2021, under the *Professional Governance Act*. As part of the program, registrant firms must renew their permit annually, and complete training and policy documentation within one year of receiving their permit.

### RENEW THE FIRM'S PERMIT TO PRACTICE

Beginning April 1, registrant firms are required to update their information and renew their Permit to Practice by paying

an annual fee. Responsible Registrants must log in to their account and ensure their firm's information—such as the firm's business name, the names and contact information of the Responsible Officer and Responsible Registrant(s), and the firm's roster of registrants—is accurate and up to date. This information can only be completed by a Responsible Registrant.

### TRAINING AND THE PROFESSIONAL PRACTICE MANAGEMENT PLAN

A registrant firm's Responsible Registrant(s) must complete Permit to Practice Online Training within one year of receiving the Permit to Practice.

The eight-hour training session (found at [egbc.ca/Firms](http://egbc.ca/Firms)) provides guidance on the requirements of a Permit to Practice.

A registrant firm must also complete the Professional Practice Management Plan (PPMP) within one year of receiving the Permit to Practice. The PPMP documents the policies and procedures that indicate how the registrant firm will meet ethics, quality management, and continuing education requirements. The PPMP also must include the registrant firm's organizational structure, names of the Responsible Officer and Responsible Registrant(s), the registrant firm's area(s) of practice, and the Responsible Registrant(s) designated to each area of practice at the registrant firm. PPMP templates are provided at [egbc.ca/Firms](http://egbc.ca/Firms).

### FAILURE TO COMPLETE PERMIT RENEWAL, TRAINING, AND PPMP

If the Permit to Practice renewal is not completed by May 31, 2022, or the online training is not completed within one year of receiving the Permit to Practice, late fees will be applied to the registrant firm and its practice will be prohibited in accordance with Engineers and Geoscientists BC Bylaws. In addition, the PPMP must be completed within one year of the registrant firm receiving its Permit to Practice and is subject to an audit.



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The Permit to Practice renewal process will open on April 1, 2022, for registrant firms to update their information and pay the annual fee. For more information, to sign up for the Regulation of Firms Permit to Practice Online Training, or to acquire PPMP templates, visit [egbc.ca/Firms](http://egbc.ca/Firms). For Permit to Practice questions, email [firms@egbc.ca](mailto:firms@egbc.ca).



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## FEBRUARY 11, 2022

*Engineers and Geoscientists BC's Council of elected registrants and government representatives meets throughout the year to conduct the business of organizational governance. The following are the highlights of its February 11, 2022 meeting.*

### BYLAW AMENDMENTS APPROVED

Council approved a series of amendments related to firm regulation, as well as additional amendments to better align the Bylaws and existing policies and procedures and to address considerations that have arisen since implementation.

The changes include amendments to the sections of the Bylaws which set out reporting requirements for changes in firm status, requirements for use of the Permit to Practice number, and the responsibilities of the Responsible Registrant(s) and the Responsible Officer.

Bylaw amendments are reviewed and approved by the Office of the Superintendent of Professional

Governance. Engineers and Geoscientists BC's current Bylaws are available at [egbc.ca/Bylaws](http://egbc.ca/Bylaws).

### BUDGET GUIDELINES APPROVED

Council approved its guidelines for the development of Engineers and Geoscientists BC's next three-year budget, which will coincide with the introduction of a new Strategic Plan for the organization.

The guidelines were updated to ensure they comply with the *Professional Governance Act* and were also modernized to reflect that Engineers and Geoscientists BC is a non-profit organization that is financially self-sustaining. The guidelines direct that initiatives and expenditures must align with the Strategic Plan; that revenue sources, expenditures, and staffing be regularly reviewed for financial sustainability as well as economies and efficiencies; and to ensure reserves are appropriately funded.

Engineers and Geoscientists BC's 2022/2023 budget will be finalized at Council's June 2022 meeting.

### COUNCIL REMUNERATION TO BE IMPLEMENTED IN FALL 2022

Council confirmed that it will implement its new policy on remuneration for Council members beginning with the 2022/2023 Council year.

Council approved the establishment of this policy following a governance review in 2020 conducted by Watson Advisors, and evaluation by a subcommittee. The policy is intended to recognize the significant time commitment associated with these roles, and the need to continue to attract qualified candidates to support the expanded regulatory role of the organization. Remuneration is also important from an equity perspective; while some firms compensate their employees for time taken to participate on Council, other registrants may not have access to the same benefits. Remuneration will allow individuals who don't have the opportunity to participate through their employer to be compensated for their time.

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## BYLAW UPDATES REFINE PROCESSES FOR FIRM REGULATION

Engineers and Geoscientists BC Council made several updates to the organization's Bylaws, focused primarily on refining the processes that support the regulation of engineering and geoscience firms.

The updates:

- change the deadline for firms to renew their Permit to Practice from March 31 to May 31, with an associated change to the late fee from May 31 to June 30;
- clarify the role of a firm's Responsible Registrant and the scope of their responsibility;

- address who may apply a firm's Permit to Practice number and how a firm should document its related procedures;
- allow a firm to provide a website as its required contact information if the website includes a business email address; and
- include amalgamations as a status change that requires a firm to update its information with Engineers and Geoscientists BC.

Engineers and Geoscientists BC's current Bylaws, and links to previous versions of the Bylaws, can be accessed online at [egbc.ca/Bylaws](http://egbc.ca/Bylaws). Registrants

are encouraged to review the Bylaws to ensure they are aware of their professional and ethical obligations.

## HOW ARE ENGINEERS AND GEOSCIENTISTS BC'S BYLAWS UPDATED?

The *Professional Governance Act* introduced new and modernized governance processes, including the ability for regulators' Councils to update their organization's Bylaws directly, allowing them to address issues quickly and responsively. All new and updated Bylaws are submitted to the Office of the Superintendent of Professional Governance for final approval.



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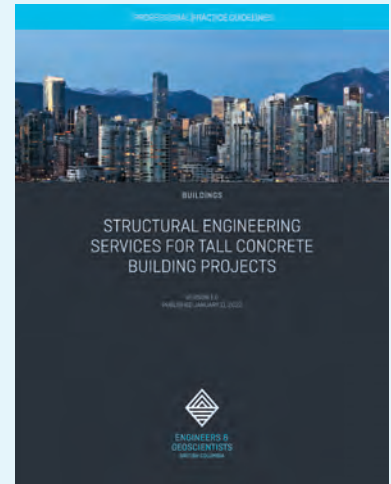
These guidelines, and other professional practice guidelines and practice-related resources, are provided at [egbc.ca/Guidelines](http://egbc.ca/Guidelines).

## NEWLY PUBLISHED PROFESSIONAL PRACTICE GUIDELINES

[egbc.ca/Guidelines](http://egbc.ca/Guidelines)

### STRUCTURAL ENGINEERING SERVICES FOR TALL CONCRETE BUILDING PROJECTS

The *Professional Practice Guidelines – Structural Engineering Services for Tall Concrete Building Projects* guide professional practice related to structural engineering services for tall concrete buildings. This 2022 publication addresses the unique challenges associated with the design of tall concrete buildings. Topics covered include design for gravity loads, design for lateral wind forces, and design for earthquake ground motions. These guidelines also address the seismic design of concrete buildings using linear dynamic analysis, and the evaluation of seismic performance using non-linear dynamic analysis, which is increasingly used for the design of tall concrete buildings.



## PROFESSIONAL GUIDELINES IN DEVELOPMENT

### MICROZONATION:

These in-development guidelines will provide broad guidance regarding the development and use of microzonation maps for structural and geotechnical professionals as well as approving authorities, the public, and related industries such as insurance and real estate. For more information, contact Allison DenToom, P.Eng., at [adentoom@egbc.ca](mailto:adentoom@egbc.ca).

### SHOP DRAWINGS:

These in-development guidelines are a revision of the 2015 *Professional Practice Guidelines – Shop Drawings*, intended to clarify expectations for development and review of shop drawings, requirements for authentication and independent review, and other professional responsibilities. For more information, contact Allison DenToom, P.Eng., at [adentoom@egbc.ca](mailto:adentoom@egbc.ca).

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**PROFESSIONAL PRACTICE GUIDELINES: STRUCTURAL ENGINEERING SERVICES FOR TALL CONCRETE BUILDINGS:** May 27, 2022

## FREQUENT PROFESSIONAL PRACTICE INQUIRIES

Can professional s delegate authentication of documents?

Many engineering and geoscience tasks can be delegated to appropriately qualified individuals and conducted under the direct supervision of engineering or geoscience professionals. However, not all tasks are appropriate for delegation.

Professionals must not delegate tasks whose main purpose is to declare responsibility for professional activities or work—like, authentication of documents. Authenticating a document indicates that a professional is taking responsibility for the document. For this reason, the professional must be directly involved in the authentication process.

Where manual authentication is used, a professional is required to apply the image of their seal, the date, and their signature. Professionals may choose to delegate the task of applying the image of their seal and the date to the physical document. However, the signature must always be applied manually by the professional and cannot be delegated to others.

For digital authentication, all aspects must be completed by the professional. A professional is required to apply their digital seal, a digital image of their signature, a digital image of the date, and their digital certificate. Professionals must not delegate the task of digital authentication.

Professionals also cannot share digital encryption software passwords for, since this practice contravenes the requirements outlined in Engineers and Geoscientists BC's *Guide to the Standard for the Authentication of Documents* (found at [egbc.ca/Quality-Management-Guidelines](https://egbc.ca/Quality-Management-Guidelines)).

The final step of authenticating a document is to apply the Permit to Practice number, in accordance with the firm's Professional Practice Management Plan. For more information on application of the Permit to Practice number, refer to

guidance in the Regulation of Firms Permit to Practice Manual, located at [egbc.ca/Firms](https://egbc.ca/Firms).

The task of signing declaration forms such as Continuing Education plans, Responsible Registrant or Responsible Officer declarations, or Annual Information Reporting should also not be delegated. These forms are intended to declare conformance or commitment to meeting expectations and obligations of professional practice, including adherence to ethical and regulatory requirements. Professionals may delegate data entry tasks or payment of fees, but declarations on professional practice remain the responsibility of the professional.

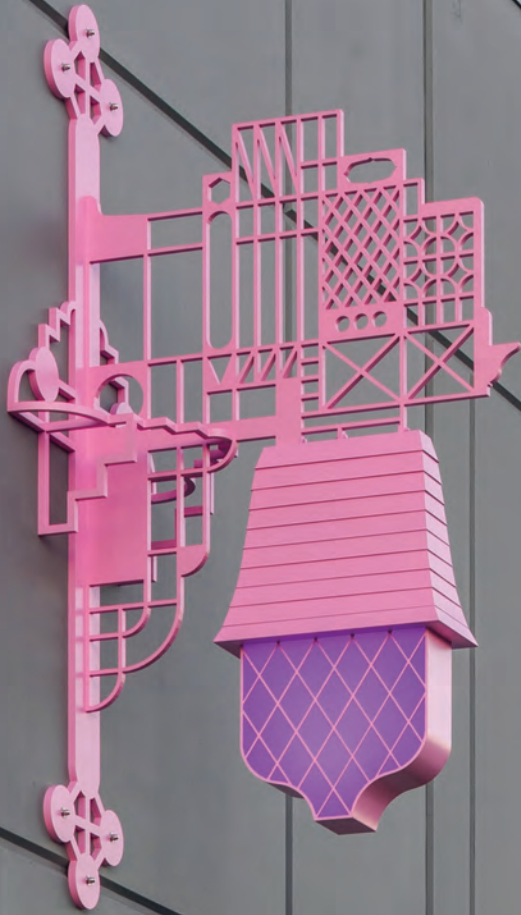
Professionals are also responsible for their professional activities or work, regardless of whether tasks were delegated to another individual. It is therefore important that the professionals be involved and in control of the authentication and delivery of work products. Professionals should be mindful of these principles when delegating tasks to others.

More information on authentication of documents is provided in the *Guide to the Standard for the Authentication of Documents*, at [egbc.ca/Quality-Management-Guidelines](https://egbc.ca/Quality-Management-Guidelines)).



Allison DenToom, P.Eng  
Practice Advisor





*Folly Electric* by Alex Morrison.  
PHOTO: BENJAMIN FENTON



# WHERE ART AND ENGINEERING COMBINE

Robin J. Miller

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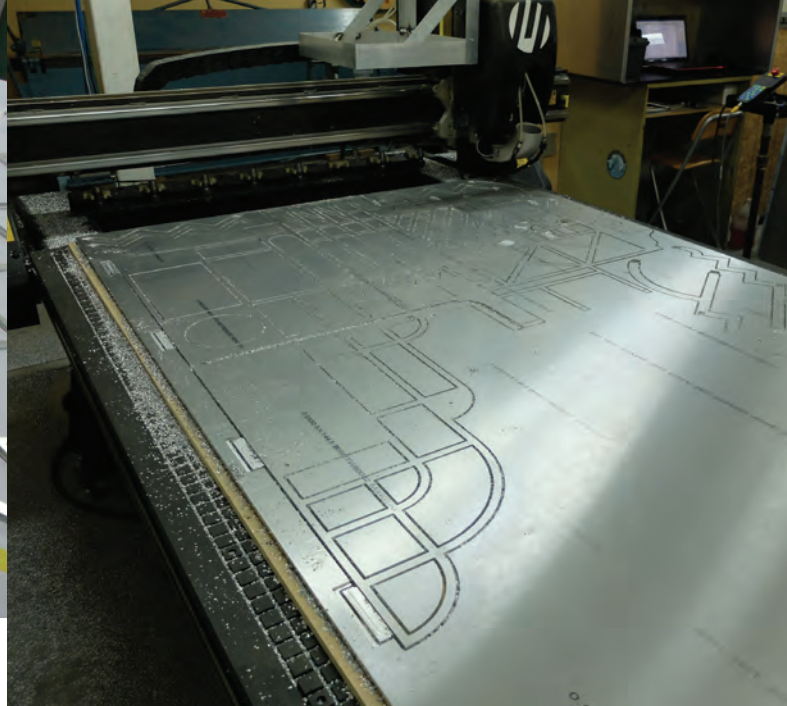
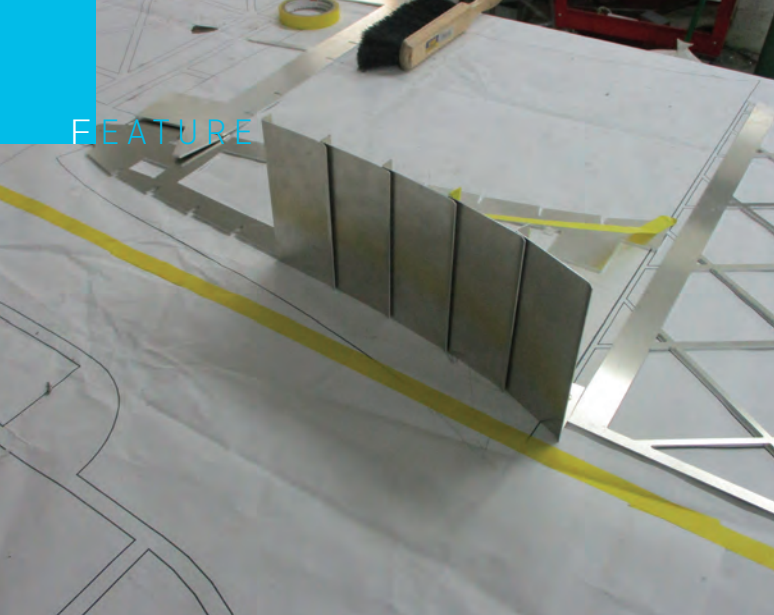
Area 58 Innovation Inc. has a rather unusual website address: [www.ufosmadehere.ca](http://www.ufosmadehere.ca). But the UFOs they make are not the usual kind, built by strange creatures from another galaxy. Rather, they are complex and often immense installations, built in Coquitlam, that require equal amounts of artistic and engineering expertise to pull off.

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**R**ob Shantz, owner and product manager of Area 58 Innovation Inc., is not one to shy away from a challenge. When an Alberta casino wanted a gigantic crown to rise out of its circular bar like an aluminum wheatsheaf, he built it. When a Vancouver developer asked for 166 illuminated flowers to grace its sales centre, he didn't flinch. When an Australian artist wanted a huge solar-powered neon sign saying "This Beautiful Day" set up at the base of the Squamish Crag, he said sure, why not. But he also always called an engineer.

Shantz started to search for the kind of engineers "who review things" almost as soon as he began to fabricate signs just out of high school, to make sure his creations, many of them very large and filled with neon, would stay where they were put. He has worked with Brian Lytton, P.Eng., principal and senior structural engineer for Peak Engineering Ltd. in Maple Ridge, since about 1999.





Left & Right: *Folly Electric* under construction. PHOTO: AREA 58 INNOVATION

"Rob's projects are a bit different from other projects I usually work on," said Lytton, such as bridges in Vietnam and municipal transportation projects around North America. "His tend to be really unusual and a lot of fun, especially lately, because they have an artistic bent to them. It's beautiful stuff not normally associated with structural engineering."

Rob Shantz knew he was destined to make things in Grade 9, when he and a buddy started manufacturing skateboards in Burnaby. After graduation, he learned the sign-making trade from an established fabricator, then started his own sign business, but soon added another,

more unusual, manufacturing project. "I started to make submarines," said Shantz, "but not your typical enclosed subs. These are more like a dive bell: about the size of a car and fitting two or three people who stay in a pocket of air as the sub goes down"—no wetsuits, air tanks or special training required. Since 1986, he's made 230 of these devices, with most deployed on charter yachts or in resorts as toys for guests.

More recent projects have included what Shantz calls UFOs: Unique Fabricated Objects, many of them giant installations "that may look really simple but are very, very complex on an engineering level, not

just in how they're built but also brought into a building and installed," he said. This includes "a very large chandelier we call *The Donut* for a casino in Edmonton's Rogers Place arena. We had to do things like get it to Edmonton in the middle of winter, lift it in segments up into its space above an escalator, and then make it look like it was all one piece," and all, of course, within a very tight timeframe.

But *The Donut* is just one of many "unique things we've had Brian review for us over the years," said Shantz. "It's my job to create three-view drawings an engineer can understand, which can be hard because these are one-off projects" that nobody's ever built before. "Brian is really good at adapting his thinking to what we do here, where we work with every kind of material"—aluminum, glass, stainless steel, fibreglass, wood—often with built-in lighting and complicated electronics. "He's willing to work with us to get an understanding of what we're trying to achieve, and then make sure it's built the way its needs to be."

"Once Rob has a pretty good rough idea of what's going to work," said Lytton, "he'll make the drawings for the structure, typically on an 11 X 17 sheet, which basically show the architecture of the



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The installation of *Crossroads* by Julian Hou. PHOTO: AREA 58 INNOVATION

piece, with an elevation view and details of what the bits and pieces are—like aluminum tubes, what kinds of bolts have to be used to anchor the structure to a wall or a beam and so on. From there, I review the structural capacity to make sure it's strong enough for the loads on it. For signs and other outdoor structures,


it's typically wind load I'm concerned with because the wind will come along and try to rip that structure right off. I'll also look at snow load and the weight of structure and sometimes earthquake forces, too, if the structure is heavier."


For indoor pieces like *The Donut*, said Lytton, "I'll check seismic forces and

wind, too, because open doors cause wind suction and wind loads can be significant inside as well. Basically, for every project, what I do is check that the structure will stand up, won't fall apart, and won't fail under the loads it will experience. Rob's work is excellent and I rarely need to ask him to make a




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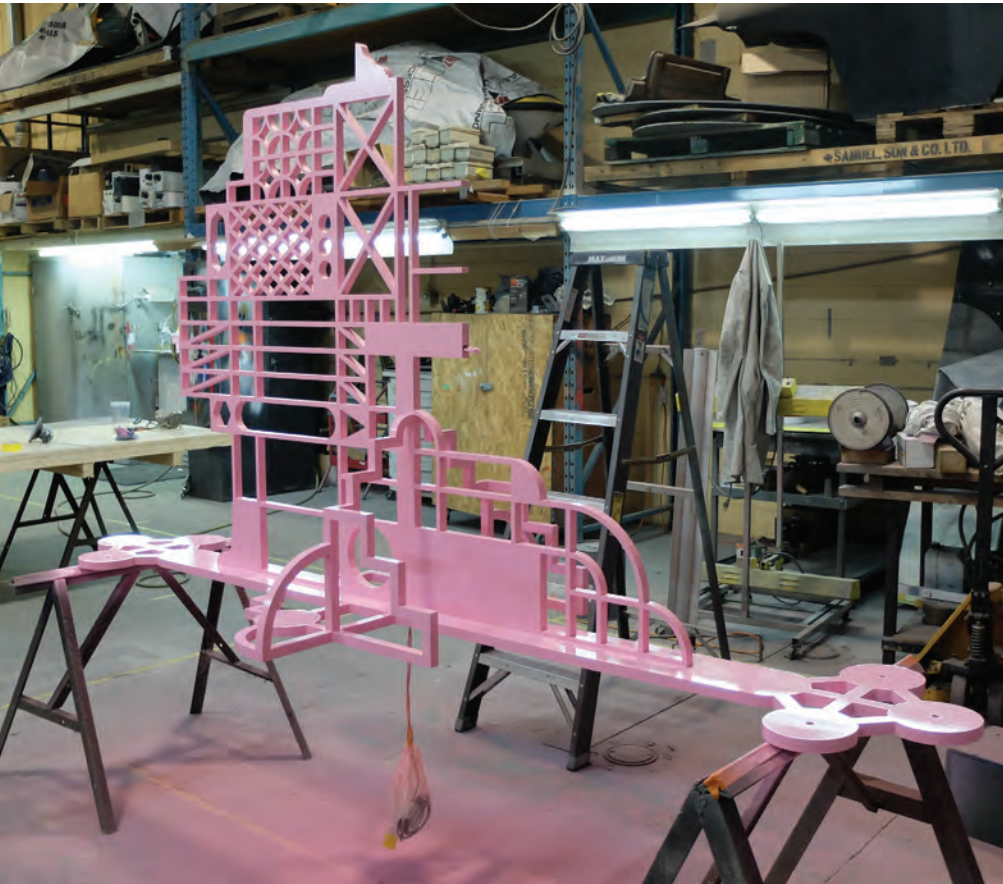
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*Folly Electric* under construction. PHOTO: AREA 58 INNOVATION

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change, but if I do, he will take my changes or suggestions no problem.” Later, after Lytton has given the drawings his seal of approval and the UFO is built, he will inspect it on site.

Currently, Lytton and Shantz are equally enthusiastic about the fact that more and more of Area 58’s work is coming in the form of public and private art projects, some of it commissioned by artists directly but even more by real estate developers who are discovering that, far from being an expensive extra, public art outside and inside their buildings is great for public relations as well as marketing and sales. These projects have included seven-foot-tall fibreglass and aluminium Christmas tree ornaments for QuadReal Properties’ annual holiday display in downtown Vancouver, as well as the bright pink vinyl-and-plastic lantern—visible especially at night to anyone travelling along the Burnaby section of the TransCanada Highway—designed by artist Alex Morrison for the side of a Regent Street commercial building.

“I like to mention Alex’s pink lantern because a lot of people know it and because it’s very, very unique on many levels,” said Shantz, both “in the design and in the collaboration between the artist and us,” which has been going on for about 20 years, and has led to the artist “changing his style, his art style, based on our relationship and what he’s learned about us. The way the lantern is engineered, the way it’s put together, reflects what he has learned about manufacturing from us.”

Another favourite public art project for both fabricator and engineer is a piece called *Crossroads* by artist Julian Hou, who asked Area 58 to design, construct and install a framing system to suspend three large stained glass

panels between pillars around the open corner of a condo building in Burnaby. "It's almost like something that would go in a church," said Lytton, "except that it's suspended outdoors. Engineers don't often get to work on stained glass, and here I was dealing with an art structure where each individual piece of glass was welded together. It's beautiful, just beautiful. And it's built to withstand any weather or seismic event it will face."

Added Lytton, "Rob and his shop are so brilliant now. They'll do things like get large sheets of aluminum and cut whatever they want out of it. They can literally make and install anything. In my mind, what they do is where art and engineering combine, which doesn't happen too often." ♦



The construction of the back lights of *Crossroads*. PHOTO: AREA 58 INNOVATION



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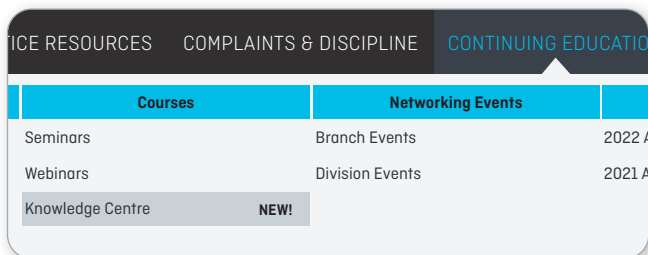
A friendly message from the BC Insulation Contractors Association

# The Continuing Education Program's first-year requirements are due by June 30, 2022.

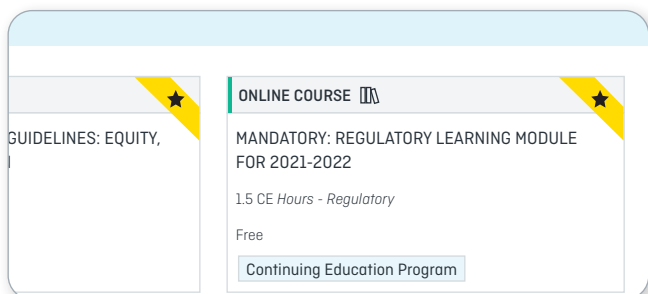
## REQUIREMENT 1

Complete the mandatory Regulatory Learning Module in the online Knowledge Centre

**Step 1:** Visit [egbc.ca/Knowledge-Centre](http://egbc.ca/Knowledge-Centre).



**Step 2:** Select "Mandatory: Regulatory Learning Module for 2021-2022".



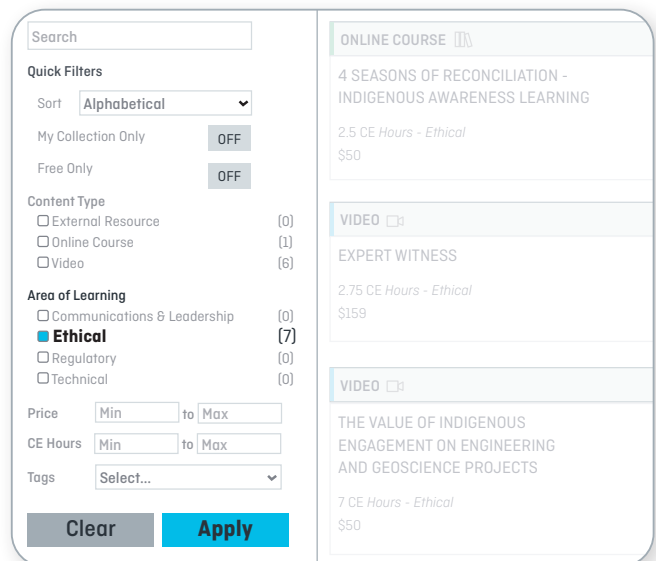
**Step 3:** Launch and complete the 1.5 hours course. Once completed, the Continuing Education (CE) Hours will be automatically uploaded into the CE Reporting System.

## REQUIREMENT 2

Complete one CE Hour of ethical learning and record it in the CE Reporting System

**Option 1:** Complete the ethical learning requirement through the online Knowledge Centre at [egbc.ca/Knowledge-Centre](http://egbc.ca/Knowledge-Centre).

**Step 1:** In the left-most column, select "Ethical" under the Area of Learning category and click the blue button "Apply". You may then choose any applicable ethical learning course at your discretion.



**Step 2:** Go into the CE Reporting System and accept the incoming activity notification to record the CE Hour(s).



**Option 2:** You may also complete this requirement through other resources at your discretion, and record the activity in the CE Reporting System.



Practising registrants (with the designations P.Eng., P.Geo., P.L.Eng., P.L.Geo.) and Practising Life Members **must complete the four requirements below** to remain in good standing and avoid suspension or cancellation.

### REQUIREMENT 3

#### Complete and upload a CE Plan

A CE Plan is a document that outlines your area of practice, risks of your practice, learning goals, and activities to help meet those goals. Once completed, you must upload your CE Plan to the CE Reporting System.

**Step 1:** Complete your CE Plan. Templates and an example CE Plan are available on our website at [egbc.ca/Continuing-Education](http://egbc.ca/Continuing-Education).

**Step 2:** Upload your CE Plan to the CE Reporting System at [egbc.ca/CEP-Reporting](http://egbc.ca/CEP-Reporting). Add or edit your CE Plan by clicking the “CE Plan” button under the CE Plan heading.

### REQUIREMENT 4

#### Complete the Annual Reporting process

(available beginning May 1, 2022)

**Step 1:** You must ensure the first three CE requirements are met in the CE Reporting system before completing Annual Reporting. You can confirm that you have met your requirements by looking for a green check mark at three locations: next to the Ethical Learning hours, next to the Regulatory Learning hours, and next to the CE Plan button.

There are no minimum CE Hours required for the Technical and Communications and Leadership areas of learning for the first year of the program.

**Step 2:** Access the Annual Reporting portal beginning May 1, 2022, to review your personal and professional information, answer declarations, and confirm CE requirements have been met.

#### CE Reporting System

Reporting Year	Ethical ⓘ	Regulatory ⓘ	Technical ⓘ	Communications & Leadership ⓘ	Annual Total	3-Year Total	Activities ⓘ	CE Plan ⓘ
Jan 01, 2021 - Jun 30, 2022 (Current)	1 ✓	1.5 ✓	0	0	2.5	2.5	Activities	CE Plan ✓

STATUS ICONS: ✓ Requirement Met   ○ In Progress   ✖ Overdue

ⓘ FOR DETAILS ABOUT THE CE PROGRAM, CONSULT THE GUIDE TO THE CE PROGRAM

Once you have completed these four requirements and have received your confirmation email from the Annual Reporting system, you will be in compliance with CE Reporting and Annual Reporting for 2022. For questions, email [cep@egbc.ca](mailto:cep@egbc.ca).

### LEARN MORE



To review the steps to fulfilling your CE Program requirements and Annual Reporting, search for the “Continuing Education Planning and Reporting” webinar in the online Knowledge Centre. Further information about the Continuing Education Program, including a detailed guide to the program requirements, can be found at [egbc.ca/Continuing-Education](http://egbc.ca/Continuing-Education).

FEATURE







# PAVING THE WAY FOR A **CARBON-NEGATIVE FUTURE**

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ERICA MATTSON

A new bioenergy facility at the University of British Columbia is setting the stage for a carbon-negative future.

PHOTO: PAUL JOSEPH/UBC



**D**r. Xiaotao (Tony) Bi, P.Eng., is a professor of chemical and biological engineering and the director of the UBC's Clean Energy Research Centre. He is an expert in green engineering whose work focuses on the design, commercialization, and use of processes and products that are feasible and economical while also minimizing impacts on ecosystems. Much of Bi's work through the Clean Energy Research Centre (CERC) focuses on greenhouse gas reduction targets. Achieving these targets, which are outlined in the province's CleanBC strategy, will require the type of transformational work researchers at CERC have become known for, focusing on solutions at every scale, from the performance of a single engine cylinder to SMART-BC, a coalition of provincial partners working on clean energy solutions for long-distance transportation sector.

To keep advancing this work, a new research and demonstration facility aimed at accelerating the development of low-carbon, market-ready bioenergy products and carbon negative energy systems has opened its doors at the University of British Columbia.

Building on work conducted at CERC over the past 15 years, the \$8 million Biorefining Research and Innovation Centre (BRIC) will bring together top academic researchers and industry partners to create cutting-edge technologies that could significantly reduce reliance on carbon-intensive fossil fuels.

BRIC's purpose is to accelerate the development of low-carbon, market-ready bioenergy products and carbon-negative systems.

"To achieve BC's 2030 greenhouse gas reduction targets, low- and negative-carbon energy systems and technologies need to be developed and deployed within next eight years," said Bi.

"BRIC will provide a platform to validate prototype technologies invented at UBC's Clean Energy Research Centre and other labs, facilitating the scale up and maturation of clean energy technologies in close collaboration with industrial partners and potential investors. At the same time, these promising clean energy technologies will be evaluated over their whole life cycle to measure their environmental and economic performance."

## THE BENEFITS AND LIMITATIONS OF ELECTRIFICATION

There are many ways to create clean energy. One of the most well-known is electrification. The growing number of electric vehicles on our roadways is one example of this, and lots of work is under way to electrify other areas of energy demand, such as the way we heat homes and buildings.

However, according to a recent white paper published by CERC, the impacts of electrification will only take us so far in meeting the CleanBC targets for 2030.



**Kerr Wood Leidal is pleased to announce the appointment of two new Principals.**

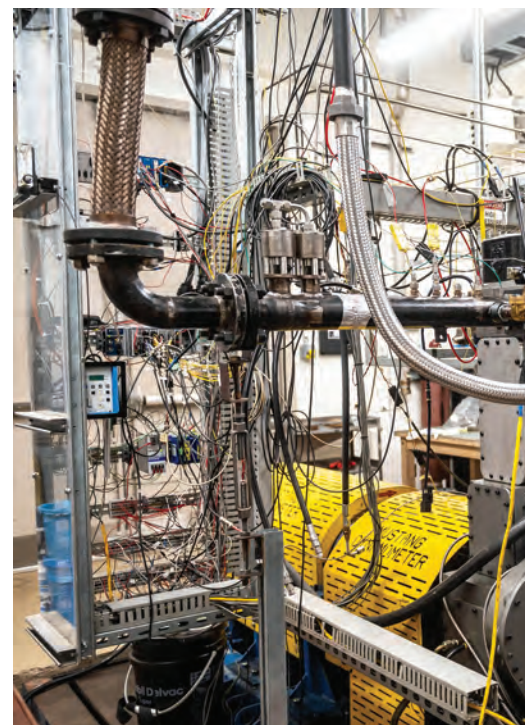


**Erica Ellis, M.Sc., P.Geo.**  
Principal, Water Resources Sector Leader  
Erica is a geoscientist with a background in fluvial geomorphology and hydrology. Her technical work focuses on creek and river morphology, hydrology, hydraulics, and sediments. She also specializes in managing complex, multi-disciplinary projects that engage with water-related challenges. KWL's Water Resources Sector specializes in effective water management by assessing watersheds, river and creek systems and natural hazard risk for a wide range of applications.

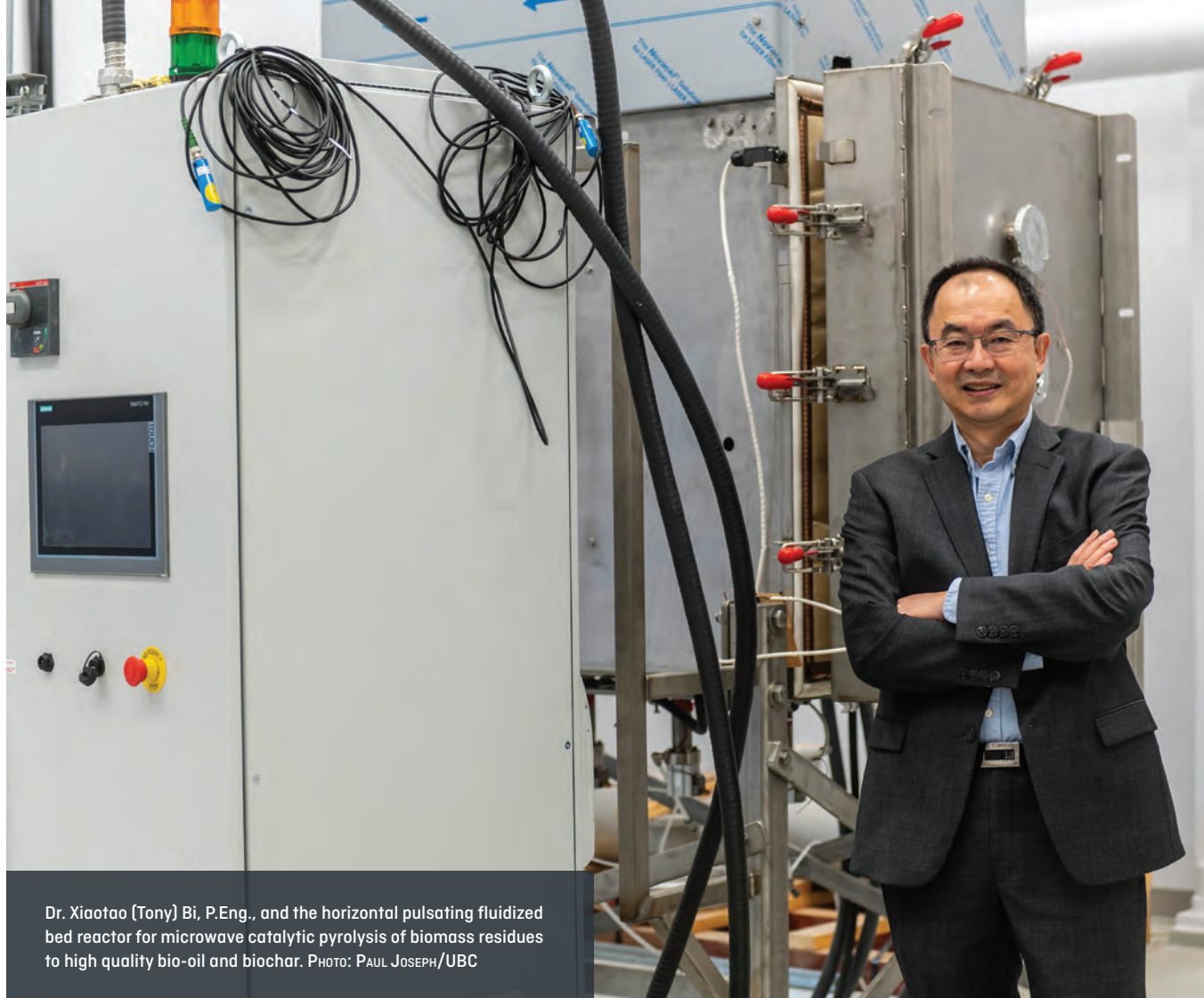


**Mike Homenuke, P.Eng., ENV SP**  
Principal, Utility Management Sector Leader  
Mike, a civil engineer, specializes in planning municipal utilities and energy infrastructure & has worked on many projects, including strategic planning, master infrastructure plans, feasibility studies, detailed designs, and construction management. Mike specializes in developing sustainable infrastructure strategies, including district energy, wastewater resource recovery, asset management programs and Envision™ project support. KWL's Utility Management Sector delivers GIS, flow monitoring, data collection, hydraulic modelling, condition assessments and master planning solutions for municipalities, Indigenous communities and industry.

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Dr. Xiaotao (Tony) Bi, P.Eng., and the horizontal pulsating fluidized bed reactor for microwave catalytic pyrolysis of biomass residues to high quality bio-oil and biochar. PHOTO: PAUL JOSEPH/UBC



High-speed imaging and spectroscopic instrumentation, which characterizes the combustion and emission processes in a direct injection engine. PHOTO: PAUL JOSEPH/UBC



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Knowing these limitations, Bi and his colleagues at CERC will be using the new projects developed under BRIC to explore and validate other sources of clean energy that can meet the need for a lower carbon footprint.

## CLEAN AND RENEWABLE ENERGY GENERATION THROUGH GREEN ENGINEERING

Clean and renewable alternatives for fossil fuels have always been considered essential for reducing emissions. With cost-effective clean energy alternatives, BC and Canada will be better equipped to meet or exceed net zero greenhouse gas emissions targets.

The Biorefining Research and Innovation Centre at UBC will focus on discovering new ways to use organic waste (like forestry biomass) into usable alternative

fuel sources. Green engineering is at the centre of this innovative work. While traditional engineering focuses on the technical and economic aspects of a technology, green engineering extends research and development beyond product manufacturing to include ecological impacts.

While green engineering is full of innovative solutions, the concepts behind it, like considering the full lifecycle of a process, are anything but new. For example, consider the long-time use of byproducts like animal or food waste to create or fertilizer. What is exciting is that these age-old concepts are now meeting the engineering and technology solutions needed to power a carbon-neutral—or even carbon-negative—future.

At CERC and now through BRIC, extensive work on technology development focused on converting abundant biomass waste in BC to renewable energy and biofuels and using potential biomass as a carbon-neutral or carbon-negative energy source. Currently developments of novel technologies such as biomass gasification, torrefaction, pyrolysis, fermentation, and methanation are in progress, and showing promising results from various demonstration projects.

## BIOENERGY POTENTIAL IN BC

One of the most promising areas of clean energy development is bioenergy production from waste biomass, which creates energy sources and fuels from the by-products of existing economic activities such as forestry or agriculture. A recent white paper published by CERC

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Dr. Adam Wu loads the steam gun used to pretreat biomass. Due to its recalcitrant nature, biomass requires some form of pretreatment to “open it up” so that enzymes can be used to subsequently break down the biomass into component sugars that can be fermented to a range of fuels and chemicals. PHOTO: PAUL JOSEPH/UBC

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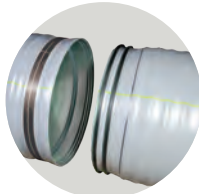
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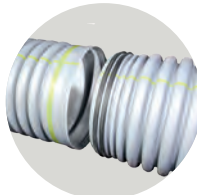
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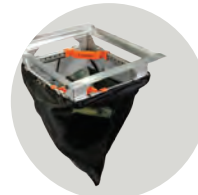
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Doctoral student Omid Gholami of the Biomass and Bioenergy Research Group feeds biomass fibers to size-reduction equipment at the UBC Gas Gun facility. PHOTO: PAUL JOSEPH/UBC

estimates that the total primary energy in currently unused waste biomass in BC is equivalent to 20 percent of the province's fossil fuel consumption.

"There is enormous potential for biomass like BC forest waste to help meet both local and global renewable energy needs," said Bi. "BRIC offers a unique opportunity not only to transform organic materials into low-carbon, high-value fuels and other bioproducts, but to do so at a demonstration scale in a virtually risk-free environment."

British Columbia possesses many of the key elements for success, including a skilled workforce, well-established forest and energy industries and renowned researchers, adds Bi. It also boasts strong support from the public and the provincial government, which implemented both a low-carbon fuel standard and the first broad-based carbon tax in North America in 2008.

BC's primary source of waste biomass is the forestry sector. During logging and sawmilling, millions of tonnes of wood residues are generated. Some are used domestically for energy production or exported as pellets, but a considerable amount remains unused. As well, to prevent wildfires, unused wood residues must be destroyed by slash burning, which generates CH<sub>4</sub>, a potent greenhouse gas. Converting these wood residues to bioenergy avoids these emissions, and also reduces greenhouse gas emissions by displacing the traditional use of fossil fuels with bioenergy resources.

The global bioproducts sector will be worth an estimated \$1.3 trillion by 2030. Yet the development of refined commercial bioproducts such as renewable natural gas, liquid biofuels and biocarbon has been hampered by a lack of proven, scalable processing technologies, explains Bi.

Removing risk from the development and deployment of technologies to



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make renewable fuels is an important part of the work Dr. Bi's team at CERC and BRIC are leading. BRIC aims to minimize the risks of bioproduct development by first assessing each new technology for technical effectiveness and economic potential. Then, in collaboration with partner companies, the UBC team will create prototypes and demonstrate the ability to produce first-class bioproducts at scale.

An example of this is the work recently completed by BRIC researchers and engineers to complete the commissioning of a pilot project for a two-stage fluidized bed steam/oxygen gasification unit. This technology used for this unit has the potential to help decarbonize the industrial sector by creating biofuels that can be used in place of natural gas. The team at BRIC has been testing this unit as a technology for converting forest biomass residues to syngas.

Syngas, or synthesis gas, is a fuel gas mixture consisting primarily of hydrogen, carbon monoxide, and often some carbon dioxide. Through the pilot project being undertaken by the team at BRIC with partners in the BC pulp and paper industry, syngas is upgraded to biomethane and can then be used as fuel.

"The syngas is aimed for combustion in lime kilns in pulp and paper mills, displacing natural gas, to help decarbonize the industrial sector."

"Upgraded biomethane (or renewable natural gas) can also be sold to FortisBC and provides a way to meet BC's renewable natural gas blending requirements," adds Bi.

The long-distance transportation sector is also exploring biofuels as a pathway to decarbonization. The transportation sector provides the mobility that connects communities and supports the economy, yet it accounted for 25 percent of all greenhouse gas emissions in 2019. To continue supporting the vast Canadian landscape, more vehicles, and increasing trade, the transportation sector must innovate to mitigate its environmental impact.

While electrification and other technologies can decarbonize urban transport, they are not viable short-term options for long-distance transport sectors. Marine, aviation, rail and long-distance trucking require sector-compatible, low carbon intensity renewable fuels. Biofuels are believed to be a clean solution and a near-term reality.

By using biomass residues to their full potential, BC could cut greenhouse gas emissions by up to 15 percent of its 2005 levels and its consumption of fossil fuels by nearly a third," said Bi. "The low-carbon and carbon-negative technologies that will be developed at BRIC will help BC meet its 2030 greenhouse gas mitigation targets and potentially reverse some of the environmental damage that has already been done." ♦

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FEATURE

# ENGINEERING DESIGN MAY P MITIGATING WILDLAN INTERFA

The summer of 2020 California River and Carmel Fires destroyed 103 structures and damaged an additional 20.  
PHOTO: DAVID A LITMAN/SHUTTERSTOCK.COM



# LAY A ROLE IN D-URBAN CE FIRES

A collection of lessons learned, best practices, and construction norms about wildland-urban interface (WUI) fires is increasingly taking shape and could influence approaches to design throughout BC in the coming years.

The push towards a series of cross-discipline standards comes as Canadian municipalities grapple with recent losses and evacuations: according to the International Association of Wildland Fire, 2,400 structures, at an insured value of about \$4.5 billion, were lost over the last 10 years. The 2016 Horse River fire in Fort McMurray, AB—one of the most expensive natural disasters in Canadian history—destroyed almost 1,600 structures and forced the evacuation of more than 80,000 people.



Each year, the BC Wildfire Service monitors and reports on the number and status of wildfires throughout the province, during a wildfire season that typically begins in March and ends in October. In 2021—an unusually long season—the service tracked more than

1,600 fires that burned nearly 8,700 square kilometers of land. It was the third-highest number of fires in BC history, higher even than the notorious 2003 wildfire season.

The role of land use, design, and recommended practices is now gaining considerable traction in BC, although many municipalities were paying careful attention long before 2021. Many municipalities in BC have residential housing subdivisions located in wildland-urban interface areas—that is, areas where fires could potentially use both buildings and traditional fire fuel (like vegetation) to progress. And some BC municipalities are addressing this risk with a series of shared knowledge, recommended best practices, and recommended materials.

A “wildland fire” is an unplanned and uncontrolled fire. Most of these types of fires start by human means: debris burning, equipment malfunctions, or discarded cigarette butts. They are very difficult to prevent and even more difficult to control, and often burn perilously close to communities and urban areas. WUI fires are fires fuel by both wildland materials (like vegetation) and developed structures (like buildings and infrastructure); WUI fires burn and spread differently from and standalone wildland and structure fires.

The City of Kelowna, in its 2016 Community Wildfire Protection Plan, reported on a multiyear process that identified “forested areas that are publicly owned and within 100 meters of any structures were assessed for fuel loading and wildfire behaviour potential”; the City also mandated that developers “retain a professional forester with wildfire management experience to conduct a fuel hazard assessment and develop a report outlining recommendations for mitigating these hazards” for areas

“on private lands where wildfire behaviour potential was moderate or greater”. The City is now updating its plan, which has been renamed “Community Wildfire Resiliency Plan”.

Andrew Hunsberger, Kelowna’s Urban Forestry Supervisor and a registered forestry professional, said that engineering work is invaluable when it comes to designing infrastructure that can continue functioning in emergency conditions. Hunsberger indicated that power loss, or damage to water availability and communications infrastructure can all have a serious effect on a municipality’s ability to respond to a fire-related emergency.

In 2003, the Okanagan Mountain Park Fire led to the evacuation of 30,000 residents and the loss of 239 homes—but Hunsberger notes that there was no significant damage to water system facilities, a scenario which would have made the situation much worse.

“Engineers play an important role in planning,” he said. “When neighbourhoods are planned, [neighbourhood] access and egress are critical. We’re not just designing one way in and one way out anymore,” he said. Hunsberger added that planning and infrastructure resiliency is critical. “Engineers play a big part in that,” he said, pointing to last year’s fire as evidence of the importance of engineering design. “We nearly lost all the power to the city twice because of [power distribution],” he said.

David Komaika, P.Eng., Director of Engineering Services for the Regional District of Central Okanagan, along with his colleague Travis Kendel, P.Eng., are two staff engineers that witnessed 75 homes lost in the White Rock Lake wildfire in the summer of 2021. For Komaika, collaboration between stakeholders is key.

“[Wildfire mitigation] is all about working with parks, land development, fire



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A residential neighbourhood in the City of Coquitlam and its proximity to forested areas. PHOTO: CITY OF COQUITLAM



PHOTO: CITY OF WEST VANCOUVER

departments, engineers, architects, and landscapers,” he said. Komaïke said that while he and other engineering staff at the Regional District are often more focused on recovery than prevention, engineers nonetheless play a part in helping to assemble best practices and mitigation strategies for wildfires that may encroach upon urban and residential areas.

Komaïke added that many rural areas must contend with water systems that are “designed for a single-house fire, not an entire neighbourhood. An interface fire is far too dangerous to tie yourself to a static water supply”, he said.

The City of Coquitlam and the District of West Vancouver are both municipalities that, like many others in BC, host buildings nearby to forested areas; these municipalities are advancing building and landscaping recommendations for wildland/urban interface areas to reduce the possibility that wildfires may impact its area.

The District of West Vancouver estimates that about half of the land in the district is within 100 metres of a forested area. In late 2021, it developed a Community Wildfire Resiliency Plan (an update of its 2007 Community

Wildfire Protection Plan), that outlines a series of recommended mitigation measures that extend to materials selection, building locations, and the proximity of combustible materials like woodpiles and dead vegetation.

In light of the increasing threat of WUI fires in Canada, and the notable lack of national standards, the National Research Council of Canada assembled a team of authors and technical experts to develop the *National Guide for Wildland-Urban Interface Fires* (downloadable at [doi.org/10.4224/40002647](https://doi.org/10.4224/40002647)). While a “voluntary guideline” that isn’t mandatory

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and lacks the weight of a municipal bylaw or building code, the guide is nonetheless is a comprehensive document “for consideration by any government, institution, organization, professional, or individual interested in the mitigation of WUI fire risk at a site, lot, or building scale or in a community”. The guide was produced as part of the National Research Council’s Climate-Resilient Buildings and Core Public Infrastructure initiative, funded by Infrastructure Canada.

The 2021 guide, while intended to improve the resilience of buildings and infrastructure, using “recent wildfire research, existing codes, standards and guidelines”, notes that, while various government authorities use a variety of guidelines and local legislation to help manage WUI risks, “wildfire concerns are not explicitly addressed in the National Building Code of Canada...or the National Fire Code of Canada”.

Not surprisingly, Hunsberger support the idea of strengthening national and provincial codes to support WUI mitigation. “Ensuring that all buildings and infrastructure are built to withstand wildfire events is going to help,” he said. ♦



A subdivision in Coquitlam. PHOTO: CITY OF COQUITLAM

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## DISCIPLINE NOTICE: MOHAMED SWALEHE

Engineers and Geoscientists BC received a complaint regarding Mohamed Swalehe's conduct related to a sprinkler system design authenticated by Mr. Swalehe for a unit in a commercial building in Surrey, BC.

On May 18, 2021, Engineers and Geoscientists BC issued a citation to Mr. Swalehe, alleging that he breached the *Engineers and Geoscientists Act* by failing to provide the Investigation Committee with a response to a professional conduct complaint against him, a copy of his complete file for the project in question, and a detailed explanation of his qualifications relating to sprinkler design and a summary of any experience he had which he believed made him qualified to design sprinkler systems.

A disciplinary hearing was held on September 28, 2021. Mr. Swalehe did not attend the hearing despite having received notification of the hearing. On October 28, 2021, a Panel of the Discipline Committee (the Panel) determined Mr. Swalehe contravened the *Engineers and Geoscientists Act* by failing to provide the Investigation Committee the information requested during the investigation.

On December 9, 2021, the Panel, in its penalty decision, ordered Mr. Swalehe's registration with Engineers and Geoscientists BC suspended until he provides the Investigation Committee with the information requested, completes and passes the Professional Practice Examination, and pays a fine of \$5,000 and costs of \$19,135.78.

## DISCIPLINE NOTICE: JOHANN G. DUERICHEN, P.ENG., SMITHERS, BC

Engineers and Geoscientists BC's Investigation Committee (the Investigation Committee) initiated an investigation of Johann Duerichen, P.Eng., on October 30, 2019, regarding the engineering services he provided for the construction of a single-family residence in Revelstoke, BC, and a retail store in Smithers, BC. A Panel of the Discipline Committee issued an interim order (the 2020 Order), restricting Mr. Duerichen's engineering practice.

In March 2021, the Investigation Committee launched a second investigation, based on concerns that Mr. Duerichen may have violated the 2020 Order by authenticating Letters of Assurance for projects in Burns Lake and Vanderhoof at a time when he was prohibited from doing so. This second investigation also considered claims that Mr. Duerichen had falsely dated the Letters of Assurance to create the appearance that he had completed them before the 2020 Order came into effect.

Following the conclusion of the second investigation, Engineers and Geoscientists BC then applied to a Panel of the Discipline Committee (the Panel) for an interim suspension of Mr. Duerichen's registration. On February 28, 2022, the Panel ordered that Mr. Duerichen's registration with Engineers and Geoscientists BC is suspended (the Interim Suspension), effective March 1, 2022.

In its decision, the Panel considered the importance of the interim practice restrictions set out in the 2020 Order, which Mr. Duerichen is alleged to have violated, and which were put in place to protect the public. The Panel ultimately concluded that an interim suspension of Mr. Duerichen's registration is proportionate to the risks.

The interim suspension is the result of the two related discipline matters, and will remain in place until the conclusion of either discipline matter and until a subsequent order of the Discipline Committee.

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Engineers and Geoscientists BC announces with regret the passing of the following registrants.

James Roderick Ainsworth, P.Eng.  
(Retired)

Albert George Eccles, P.Eng.  
(Retired)

Keith Elder Fenton, FEC, P.Eng.  
(Retired)

Michel Paul Filion, P.Eng. (Retired)

Jiri Greg, P.Eng. (Non-Practising)

Simon David Handelsman, P.Eng.

Brendan Holden, P.Eng. (Retired)

Dennis Robert Lamb, P.Eng.  
(Non-Practising)

Cheuk Ho Leung, P.Eng. (Retired)


Keith McCandlish, P.Geo.

Gerald Edward Miller, P.Eng.  
(Retired)


Henry Ramsay Miller Murray, P.Eng.  
(Non-Practising)

Thomas Edward Pelton, P.Eng.  
(Non-Practising)

Michael Mervin Rich, P.Eng.  
(Retired) ♦



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# CONTINUING EDUCATION: REQUIREMENTS

## CONTINUING EDUCATION REQUIREMENTS

The Continuing Education Program is mandatory and applies to all registrants with practice rights. Registrants without practice rights (Non-Practicing or Retired) must complete minimum requirements to maintain ethical and regulatory competency. Engineers-in-training, geoscientists-in-training, and Life Members are exempt. The end of the first reporting year is June 30, 2022. By June 30 each year, the Ethical Learning and Regulatory Learning Modules and CE Plan must be completed and recorded in the online reporting system. More information, including our Guide to the Continuing Education Program, a CE Plan Template, a CE Plan Example, and a link to the Reporting System is provided at [egbc.ca/Continuing-Education](http://egbc.ca/Continuing-Education).

DESIGNATION	TOTAL HOURS REQUIRED	ETHICAL/REGULATORY	TECHNICAL, COMMUNICATIONS AND LEADERSHIP	CE PLAN
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STRUCT.ENG.	120 PER 3-YEAR ROLLING PERIOD	THE MANDATORY REGULATORY LEARNING MODULE (ONCE PER REPORTING YEAR)  ONE CE HOUR OF ETHICAL LEARNING (ONCE PER REPORTING YEAR)	BALANCE OF HOURS REQUIREMENT	REQUIRED
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