

Decarb Lunch Series

zebx

 **BC Hydro**
Power smart

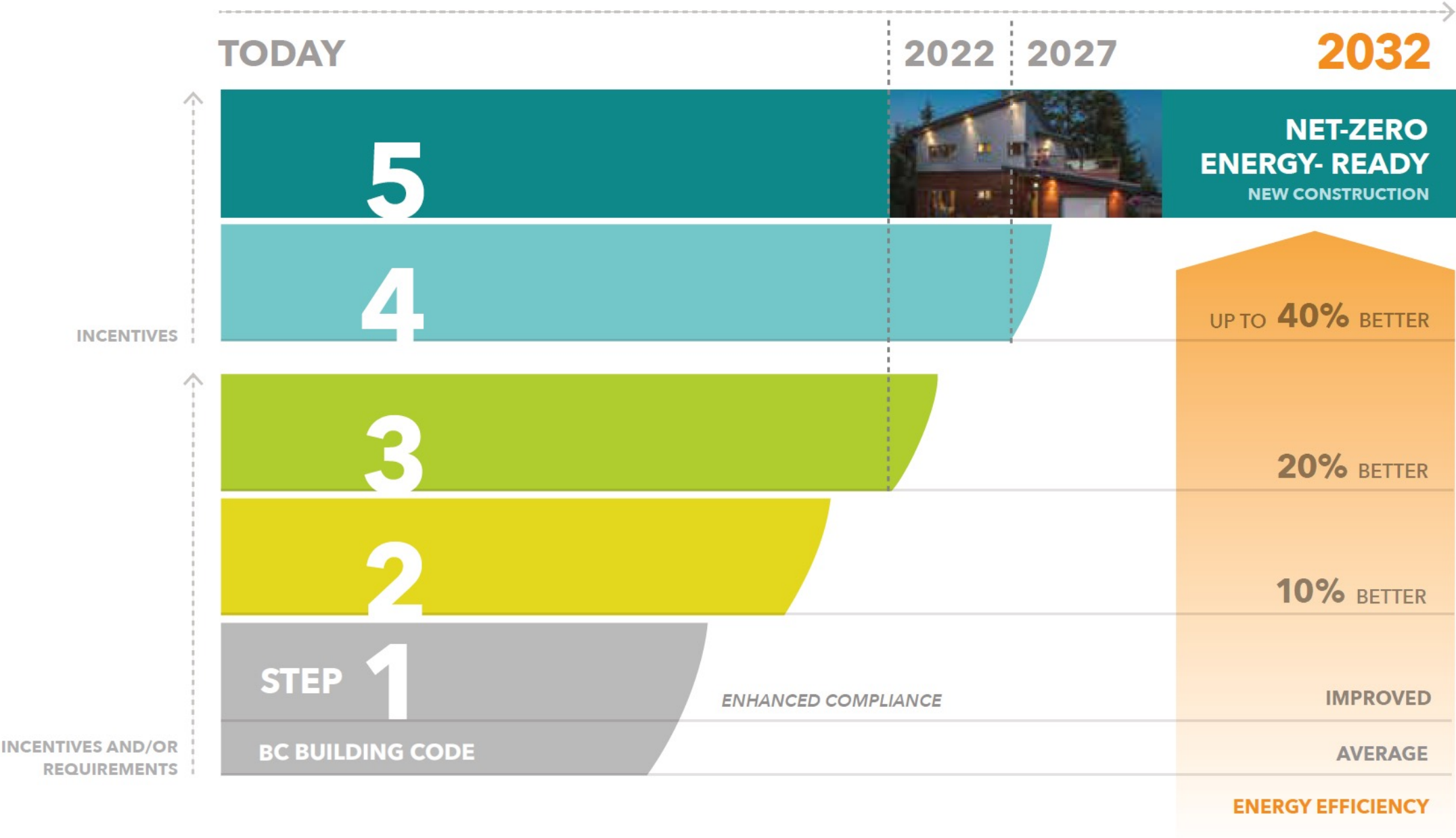
 CITY OF
VANCOUVER

Be Prepared!
The BC Energy Step
Code Capacity Study

Fri Feb 25, 2022,
from 12- 1pm PDT
Free Webinar | zebx.org

 **VANCOUVER**
ECONOMIC
COMMISSION

PATHWAY TO 2032: **PART 9 (HOMES)**



BC Energy Step Code Capacity Study

Co-host:

George Benson, Manager, Economic Transformation Decarbonization
& the Just Transition, Vancouver Economic Commission



POLL 1

Tell us about yourself!

Three-part anonymous poll



Financing Low-Carbon Performance



Vancity

zeb^x



Forestry Innovation
Investment

FREE WEBINAR

Mar 9, 2022

9.30 - 10.30am PST

zeb.org





ZERO EMISSIONS BUILDING EXCHANGE



BUILDDEX
VANCOUVER

AMPLIFIED

#BUILDEXVancouver #BUILDEXAmplified

March 23 – 24, 2022

In Person @ Vancouver Convention Centre West



The BC Green Building Calendar

Welcome to the BC Green Building Calendar.


Here you will find all of the latest events and training related to green building subject matter, including: emissions, energy efficiency, resiliency, high-performance design, and more.

If you would like to submit an event or for more details on submission guidelines, see the bottom of this page.

▸ Filters

February 2022

Course	Presented by: BCIT
Feb 23 Wednesday 12:00 - 2:00pm	 CESA 1161 – Advanced Life Cycle Assessments Using Impact Estimator Software

Award	Presented by: CaGBC
Feb 24 Thursday 9:00am	 2022 CaGBC Awards: Nomination Closing Date

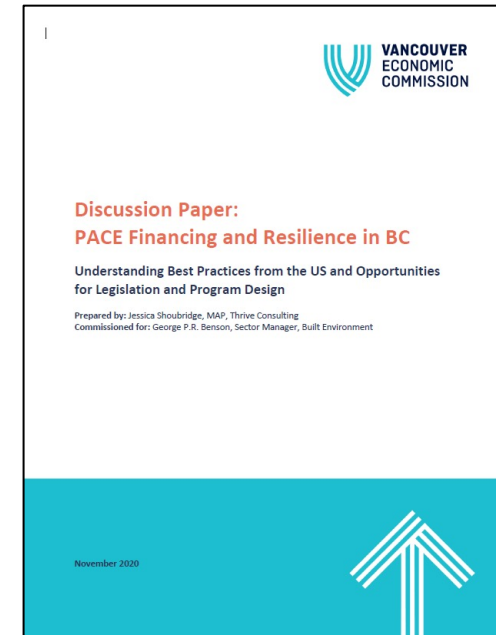
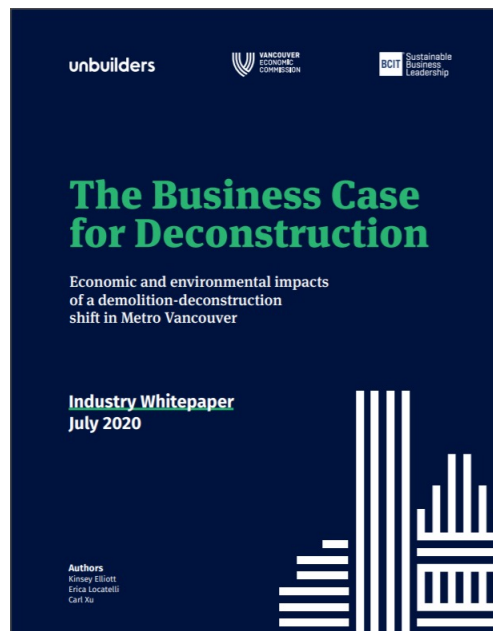
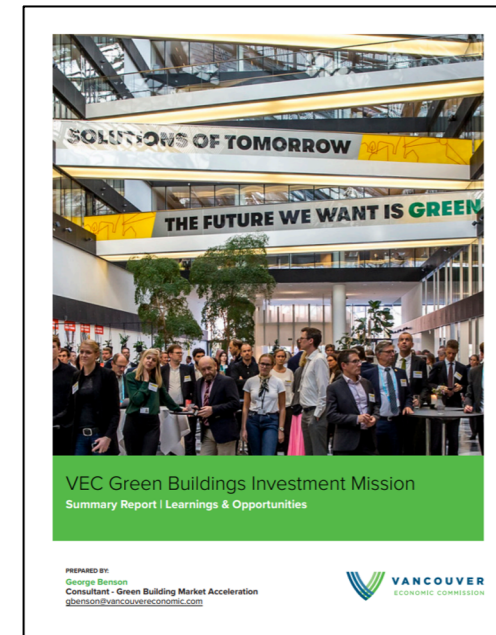
February 2022						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	1	2	3	4	5
6	7	8	9	10	11	12

To submit events for your organization:

[Join our community](#)

Our Purpose

**To support the building of a prosperous,
inclusive, low-carbon and resilient economy
for all in Vancouver.**

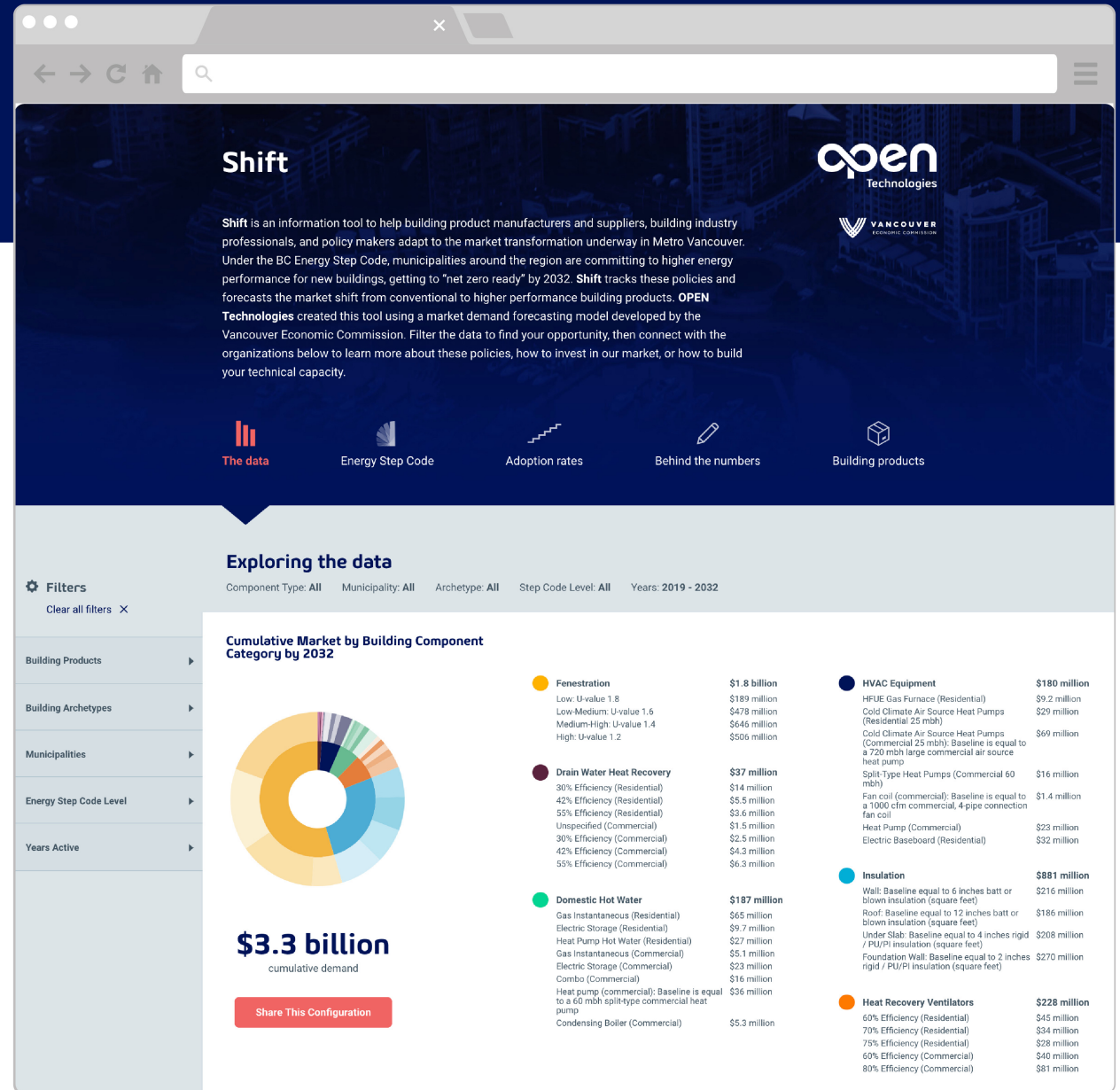


Shift

shift.opentech.eco

Shift helps building industry participants, investors, and policy makers to:

- Understand the changing building codes by city
- Identify the changing component landscape
- Realize new opportunities



- Defined what a just transition means for Vancouver
- Conducted initial labour analysis construction and transportation-related labour market segments
- Reviewed global best practices on a just transition
- Findings: shortage of skilled labour; re-skilling & re-training; governance
- Recommendations: to create a Regional Just Transition Council (in progress)

Best Practices for a Just Transition in Vancouver

PREPARED BY
Vanessa Sun
UBC Sustainability Scholar, 2021
August 2021

PREPARED FOR
George Patrick Richard Benson
Manager, Economic Transformation
(Decarbonization and Just Transition)
Vancouver Economic Commission



BC Energy Step Code Capacity Study

Speakers

- Helen Goodland, Principal. Head of Research & Innovation at Scius Advisory
- Meredith Hamstead- Co-founder of thinkBright Homes Ltd.



BC Energy Step Code Capacity Update

February 2022

Helen Goodland

Principal, Head of Research and Innovation

hgoodland@scius.ca

www.scius.ca

SCIUS
Advisory

ABOUT THE STUDY

Commissioned by Ministry for the Attorney General
Published June 2021.



Purpose was to study the readiness of key construction professions to implement the BC Energy Step Code in 2022, 2027 and 2032

This presentation focusses on the findings and recommendations.

Full report, presentation and resources available on the Energy Step Code website
<https://energystepcode.ca>



KEY PROFESSIONS

Clients	Owners
	Developers
Designers and Consultants	Architects
	Engineers involved in construction of buildings, including mechanical, electrical, building envelope
	Estimators and cost consultants
	(Home) Designers (i.e., Part 9 buildings not requiring an architect)
	Energy Advisors & Modellers (Pt 9)
	Energy Modellers (Part 3)
	Estimators and cost consultants
Builders & Trades	General contractors (Part 3)
	Licensed residential builders (Part 9)
	Carpenters, Framers, AVM Barrier Installers & Envelope Trade
	Insulators - Part 3 & Part 9
	Electricians - Part 3 & Part 9
	HVAC Installers/Mechanical Design and Installers - Part 3 & Part 9
	Gas Fitters - Part 3 & Part 9
	Roofers - Part 3 & Part 9
	Plumbers - Part 3 & Part 9
Building Officials	Glazers, Window & Door Installers
	Sustainability and planning staff
	Engineers, inspectors and regulators

State of Readiness Snapshot by Profession for Part 3 and Part 9 New Construction

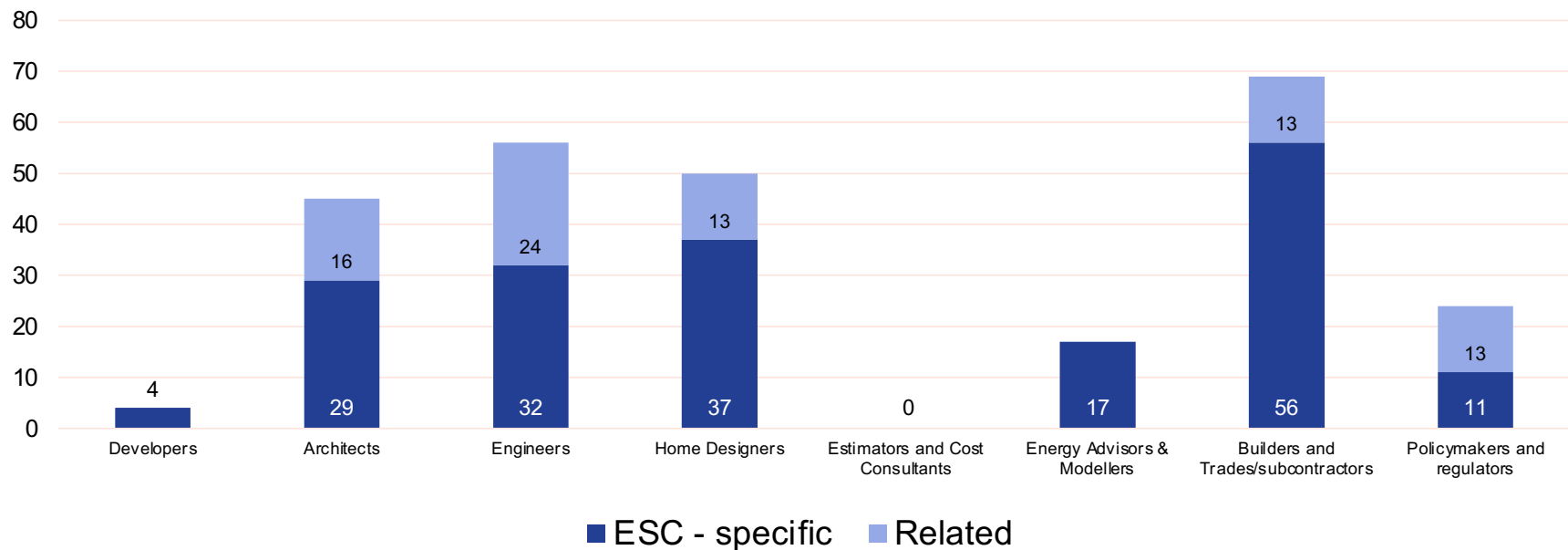
Based on province-wide industry survey and 21 interviews with industry organizations and educators conducted Spring 2021

	Part 3				Part 9		
	2022	2027	2032		2022	2027	2032
Developers	Yes	Yes	Partial		Yes	Yes	Partial
Architects	Yes	Yes	Partial		Yes	Yes	Yes
Engineers (Mechanical, Electrical, Building Enclosure)	Yes	Yes	Yes		Yes	Yes	Partial
Estimators and Cost Consultants	Partial	Partial	Partial		Partial	Partial	Partial
Energy Modellers	Yes	Yes	Partial		Yes	Yes	Partial
General Contractors (CMs, PMs and Superintendents)	Yes	Yes	Partial		Partial	Partial	Partial
Carpenters, Framers, AVM Barrier Installers & Envelope	Partial	Partial	Partial		Yes	Partial	Partial
Insulators	Yes	Yes	Partial		Yes	Yes	Partial
Electricians	Yes	Yes	Partial		Yes	Partial	Partial
HVAC Installers, Mechanical Design/Installers and Plumbers	Yes	Partial	Partial		Yes	Partial	Partial
Gas Fitters	Partial	No	No		Partial	No	No
Roofers	Yes	Yes	Yes		Yes	Yes	Yes
Glazers, Window and Glass Door Installers	Yes	Yes	Partial		Yes	Yes	Partial
Building Officials	Yes	Partial	Partial		Yes	Partial	Partial
Local Government Planning and Sustainability Staff	Yes	Partial	Partial		Yes	Yes	Partial

TRAINING AVAILABILITY

Number of courses and programs

Combines both Pt 3 and Pt 9



- Data gathered Q1 2021
- Given COVID, many courses were online so accessible province-wide
- Quite a few had been temporarily suspended

Research Findings



Inconsistent
Communications



Technical
Concerns



Regional
Challenges



Profession-
specific Issues

Inconsistent Communications

Lack of clarity about technical requirements of the 2022 update of ESC and BCBC.

Lack of profession-specific competency frameworks

Uncertainty about course quality - lack of credentials/training for trainers

Lack of guidance on effective mentoring - ambiguity around value of course credentials.

Course content can be misaligned with industry needs – too long, too technical.

Lack of credentials that demonstrate practical experience.

Courses need to **better describe learning outcomes for appropriate profession, skill-level and building type**

There's too much choice and I can't afford to waste time with the wrong course.

Courses don't adequately describe the learning outcomes, who they are for and what types of buildings they apply to.

We don't know what we don't know. There's no "competency framework" which sets out the skills I need to have.

Who are the trainers? What practical experience do they have? Are they any good as teachers?

Why do I need to take Passive House courses to be recognized if I have already built many Passive House projects?

Technical Challenges

Retirement of experienced workforce may leave an “experience vacuum”.

Lack of cooperation, collaboration, and communication between trades.

Public education needed on impacts of ESC on building design and functionality.

Barriers around **underserved populations** and language of communication materials

Lack of cross-training and building as a system for higher levels of code.



Recommendation: Provide training on actual jobsites, such as a provincially-sponsored housing project.

Every year, Thompson River University's School of Trades and Technology partners with CHBA CI to give students hands-on learning experience on the job site.

Regional Challenges

Current ESC programs **do not adequately address regional issues** (availability of labour, equipment and materials).

Customized training needed on **cold climate construction** in remote northern regions.



Bella Bella Passive House Multi-family modular

Profession-Specific Issues

Issues in meeting higher levels of ESC for:

Developers and Owners, Building Officials, General Contractors, Architects, Home Designers and Estimators.

Lack of training for **building operations and commissioning** to maintain performance.

Confusion around future role and involvement for **gasfitters**.

Scarcity of **Energy Advisors in rural regions**, limits collaboration with trades and building inspectors on constructable solutions to achieve energy performance goals.



Recommendation: Offer financial incentives to help address real cost of training for key professions. Include cost of program, travel and accommodation, and cost of forgone income.

Iron and Earth is an NGO geared to retraining oil and gas workers in renewable energy skills.

Recommendations



Sustained
Comprehensive
Engagement



Tackle Technical
Challenges



Regionally Appropriate
Solutions



Solve Profession-
specific Issues

Sustained Comprehensive Engagement

Launch a **province-wide campaign** that explains the details of building code changes through to 2032.

Develop **outreach materials for local governments** to help them communicate their intentions to adopt ESC.

Work with training providers to **quickly develop and deliver training** focused on subject matter in demand

Develop a **standardized course evaluation tool** to be used by students at the end of each course.

Establish a “**Certificate in Training in Low Carbon Buildings**” for trainers.

Sponsor a centralized online training hub listing current and relevant training offerings.



Modular Plant Tour
VRCA Innovation Bootcamp



The BC Green Building Calendar

This events calendar is a collaboration between ZEBx, CaGBC and BC Hydro.

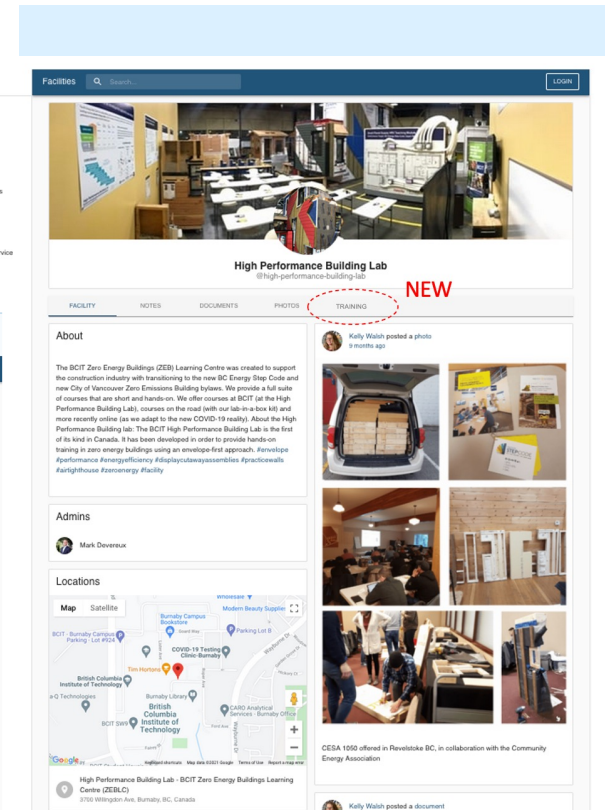
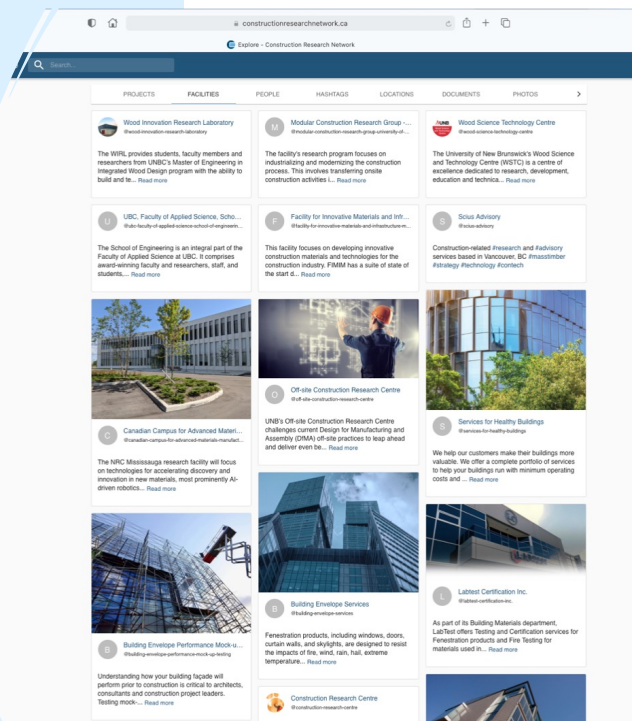


The Construction Research Network (CRN)

A free, go-to resource for building-related R&D.

- Projects
- Equipment
- Facilities
- Expertise

A social network for researchers and educators.



CONSTRUCTION
RESEARCH NETWORK

www.constructionresearchnetwork.ca

Tackle Technical Challenges

To help trades work together effectively, include **training on teamwork and collaboration** with “building as a system” courses.

Develop **multi-disciplinary hands-on training projects** to solve technical issues such as air barrier awareness.

Develop **practical, region-specific resources for the public** explaining the advantages of higher levels of the ESC.

Support new Canadians by **developing training materials in other languages** commonly spoken in BC

Develop a “**Prior Learning Assessment and Recognition**” credential to recognize successful prior site experience.

Develop a series of short and focused training options (i.e., **micro-credentials** or badges).



BCIT High Performance Building Lab
The Passive House for Trades course promotes hands-on multi-disciplinary learning and collaboration.

Regionally Appropriate Solutions

Develop hands-on training on cold climate construction by sponsoring higher step projects in the north.

Consider financial training incentives for workers in rural regions (e.g. cover travel costs, time away, etc.).

Adopt a **Best Practice Advisor / Mentorship program** (similar to WoodWorks or WorkSafe) and cover travel costs to remote communities.



Technical advisors from WoodWorks BC and WoodWorks Ontario

Solving Profession-Specific Issues

Developers and Owners

Develop marketing materials that explain benefits, requirements, and costs to achieve ESC compliance.

Building Officials

Develop training that covers energy reports, building systems energy use and air barrier performance.

GCs (Pt 3)

Combine a revamped suite of training resources with an incentive program or regulatory requirements to take training.

Architects

Create an incentive program that allows developments in rural areas to access architects with ESC expertise.

Estimators

Develop training that explains ESC requirements to help support accurate and consistent pricing.

Energy Advisors

Provide incentives for regional colleges and students to deliver and complete Energy Advisor training.

Building Operators

Develop and provide training and ongoing support that explains how to operate HVAC and other building systems properly.

Gas Fitters

Provide targeted incentives to take training on heat pump installation and electrification of buildings.





Final Observations

- Adoption of the ESC varies – of the 162 municipalities in BC, 60 have made it law, and a further 22 have made commitments to adopt – has a big impact on motivation for training.
- Progress has been made in developing industrywide capacity since the initial roll-out of the ESC in 2017.
- Generally, key professions have acquired the skills necessary to achieve the lower Steps – training exists. No excuses!
- 2022 Building Code update require projects to be 20% more energy efficient than they are today. Knowledge gaps exist!

oN5 high performance mass timber office
Naikoon Contracting

Two Red Flags

Experience Vacuum

~ 22% of BC's AEC labour force is expected to retire by 2030

Lack of mentorship makes it difficult for young workers to get sufficient practical experience (i.e. time in the field solving constructability issues) to design and build complex projects – irrespective of ESC Step required.



Paradigm Panels, Nelson, BC.

Higher step buildings cannot be built like lower step buildings

This study did not look at the availability of training on digital literacy and modern methods of construction.

All key professions will need to embrace new enabling practices such as digital tools, prefabrication, team integration and collaboration, new trade relationships and responsibilities, and new forms of project delivery.



Thank You!

PH1, North Vancouver
Hemsworth Architecture, Naikoon Contracting

Helen Goodland
Principal, Head of Research and Innovation
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Advisory



POLL 2

Tell us about your training

Two-part anonymous poll



Training: a critical strategy to keep costs down as performance rises

ZEBx Decarb lunch:

Be Prepared: the BC Energy Step Code Capacity Study

February 25, 2022

Meredith Hamstead,
Director, thinkBright Homes



A bit about us...

BUILDER:
thinkBright Homes
Paul Denchuk and Meredith
Hamstead, co-owners
Years of Experience: 25



“We will not build a house that is simply ‘code compliant.’ It’s not worth it for anyone – it doesn’t deliver comfort or cost efficiency, it doesn’t deliver any benefits. It’s little more than a roof overhead.”
- Paul Denchuk



- 4-10 Deep Energy Retrofits
- 4 Custom New Homes
- Spec homes
- Exclusively Step 5+
- Mid-market clientele



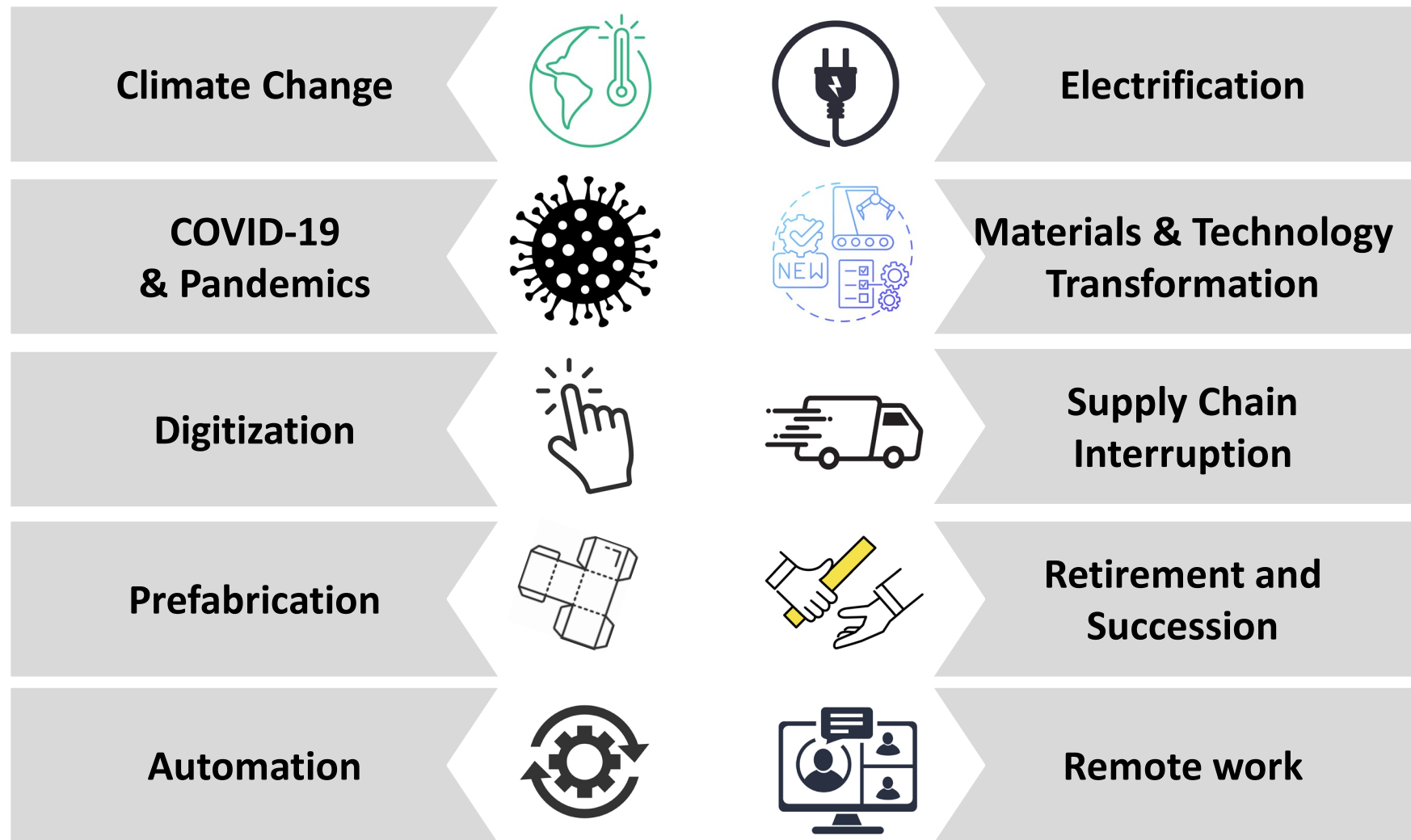
thinkBright's Biases

- **Family owned and operated**
- **Part 9**
- **Rural(ish) context (or “not metropolitan”)**
 - **Affects the municipal/regional regulatory context.**
 - **Affects subtrades to waste management**

The Context for Change: *Regulation*



The Context for Change: *disruption*



Threats or Opportunities?



Today is already different than the past.

Learning (*aka training*) is not optional.

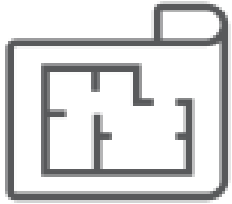


If you are going to fail,
fail small and fast.

4 Strategies for Cost-Effective High Performance Building



Culture of Care about Climate Change (G.A.S)



Integrated Design Process: Plan for efficiency



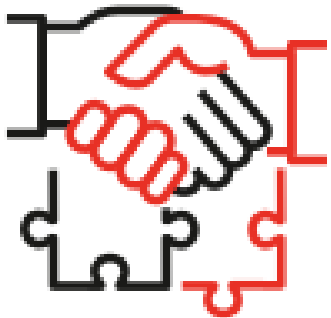
Relationship development
(Co-Dependence – House as a System)



**Cultivating nerdy teams
(aka Hiring and Training)**

Hiring (finding nerdy people)

- We do not hire principally based on skills and experience.
- We do hire for shared purpose, values alignment, and personality.
- Training is a critical part of building our resilience.



Training (cultivating nerdy teams)



WHY training?

1. Because we must...
2. Because we can...
3. To retain people
4. To manage costs



WHO do we train?

- **Everyone internally, including ourselves**
- **As many people externally as we can**



HOW do we train?

FORMAL

In-person courses

FORMAL

Web-based courses

FORMAL

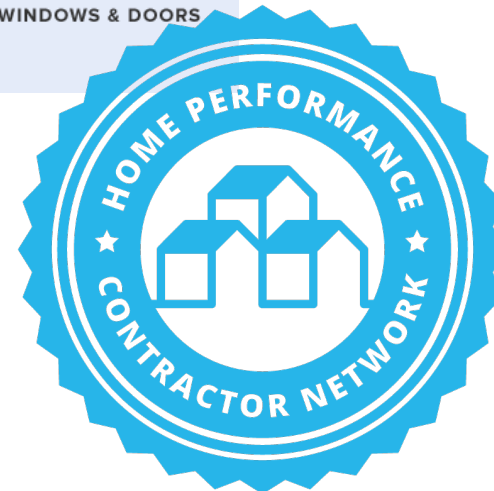
Apprenticeship



FENESTRATION ASSOCIATION OF BC
THE ASSOCIATION FOR MODERN GLASS, GLAZING, WINDOWS & DOORS



Proud Employer
of Apprentices



HOW do we train?

On Site

Blower-Door Day



On Site

Employee-led mentoring/teaching



On Site

Supplier Training



What does it cost?



WorkBC



Summer Works Wage Subsidy
Apprentice Wage Subsidy



Government
of Canada

Gouvernement
du Canada



Does it keep us cost competitive?

Yes

Thank you!

Meredith Hamstead,
Director, thinkBright Homes

online@thinkbright.ca

