



# ANNUAL REPORT

2018 - 2019



## Zero Emissions Building Exchange

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# CHRISTIAN CIANFRONE

Executive Director

## SCALING LOW CARBON SOLUTIONS FOR RESILIENT AND MORE LIVABLE CITIES.

The pace of change within our industry today is unprecedented. The City of Vancouver and the Province of BC have transformed how they regulate building emissions and energy use, setting hard building targets today and into the future. This forward looking approach has created a constant iteration in how clients and project teams are interpreting what it means to truly design and build a building of the future. Governments and innovative owners are pursuing the highest standards of performance today via pilot projects and incentive programs, and are already looking beyond emissions to issues of liveability, resiliency and climate adaptability. Leading project teams are responding with innovative strategies - evolving best practices that align an increasing number of objectives.

ZEBx has been created at an opportune time to convene this community of leaders, track and share their emerging strategies, connect them with global best practices, and work towards optimized solutions for industry scalability.

Change can be challenging in an industry focused on mitigating risk. ZEBx appreciates and shares these values and has responded by striving to build confidence through this time of change. Yes, change is happening fast, however, we are in a time where our end objectives are universally aligned and the opportunity for collaboration is at its peak. Nothing short of a collective effort is required to be successful. I invite you all to come and engage with us at ZEBx, be part of our community, exchange best practices, and build confidence for your next zero emissions project.

**CHRISTIAN CIANFRONE**

# ABOUT THE ORGANIZATION

## WHAT WE DO

The Zero Emissions Building Exchange (ZEBx) is a collaborative platform that strengthens the public, private and civic capacities for zero emission buildings in Vancouver and British Columbia. We are an industry hub that facilitates knowledge exchange and catalyzes action to accelerate market transformation.

Vancouver has one of the most progressive set of policies around zero emission buildings and industry is being challenged to respond quickly and innovatively. By 2025, the City of Vancouver will require most new buildings to be near zero emissions and all new buildings to be zero emissions by 2030. Under the BC Energy Step Code, all new buildings in BC will be built to net zero energy ready standards by 2032 or sooner. ZEBx is dedicated to supporting the industry through this transition, acting as a catalyst that builds capacity by convening and advancing solutions from leaders and early adopters that are building tomorrow's buildings, today.

**“TO RAPIDLY ACCELERATE INDUSTRY  
KNOWLEDGE, CAPACITY AND PASSION  
FOR ZERO EMISSION BUILDINGS.”**

## CENTRE OF EXCELLENCE

ZEBx is Canada's first Centre of Excellence for high performance buildings and is a founding member of the United Nations Economic Commission for Europe's (UNECE) Network of International Centres of Excellence for High Performance Buildings.



*The Heights, Cornerstone Architecture*

## OUR TEAM



**Christian Cianfrone**  
Executive Director



**Jessica Williams**  
Communications and  
Partnerships Manager



**Ayla Collins**  
Events Manager



**Zahra Teshnizi**  
Research Manager

## STEERING COMMITTEE



**Sean Pander**  
Green Building Manager  
**City of Vancouver**



**Fiona Famulak**  
President  
**Vancouver Regional  
Construction  
Association**



**Rob Bernhardt**  
CEO  
**Passive House Canada**



**Eesmyal Santos-  
Brault**  
Director  
**OPEN**

"To get to a future where all buildings are net-zero ready, builders, designers, suppliers, and real estate professionals need to work together. ZEBx connects industry and governments in a supportive atmosphere that encourages collaboration, knowledge sharing, and technology partnerships. By bringing diverse partners together, ZEBx nurtures ingenuity and accelerates change."

—Jack Wong, CEO, Real Estate  
Foundation of BC

# OUR EVENT HIGHLIGHTS

## COMMUNITY OF PRACTICE

Our theory of change is simple – support and deliver programs that encourage industry to innovate beyond the status quo, convene those innovators to share their experience, and mobilize our partners to advance the knowledge and overcome barriers.

Our inaugural event took place when we launched our organization in July 2018 to an intimate crowd of 140 of Vancouver's leading building industry actors. Vancouver's Mayor delivered inspiring remarks alongside the President and Board Chair of the Vancouver Regional Construction Association, and ZEBx's newly appointed Executive Director. Eight months later, we decided to close out our first year of operation in a similar fashion, launching Vancouver's largest Earth Day Celebration in partnership with the Living Future Collaborative (LFV) Vancouver. With over 200 participants, the event reached a diverse cross section of industry, including mission-aligned city and federal politicians, developers, practitioners, industry associations, researchers, trades associations, suppliers, global experts and more. Through these and our many other workshops, dialogues and project tours, we are able to create a platform to connect industry experts and create lasting partnerships that will enable us to build and scale knowledge and solutions.



## HIGH PERFORMANCE BRUSSELS TOUR

As ZEBx continues to develop relationships with leaders and governments worldwide, the organization is well positioned to connect local industry to innovation and best practices from around the world. Our networks extend to Brussels, Belgium – a region that has undergone a renaissance in building performance in the last 12 years, and since 2015, has required all buildings to meet Passive House levels of performance. Through our partnerships, ZEBx was able to lead a unique learning opportunity in Brussels for 25 of Vancouver's top development and real estate influencers, visiting many high performance buildings and gaining access to insights around policy, design and construction.



Group photo of the High Performance Brussels Tour Participants

# CREATING DIALOGUE

In our first year of operation, the majority of our conversations with industry stakeholders indicated a strong appetite for dialogues. This finding was validated through our Annual Survey, which indicated nearly 100% of respondents would like to see more content-specific programming in Year 2 over a range of topics. Some highlighted programming from this past year includes:

## 1 HIGH DENSITY PASSIVE HOUSE DIALOGUE

This event brought together the project teams from Vancouver's first two multi-unit residential Passive House buildings – The Heights and Brixton Flats – to discuss the successes, challenges and solutions experienced throughout the design and construction stages. This sold-out event focused heavily on active audience participation, creating a collaborative and open-source environment, where both project teams openly discussed their top barriers and solutions, and audience participants had the opportunity to ask their specific questions in an open dialogue setting. The event's major discussion themes included: wall performance and thermal bridging; overheating as a reoccurring issue in Passive House design; air tightness education and training; and a product highlight reel.

## 2 HEAT PUMPS FOR DOMESTIC HOT WATER

Over the year, we developed several events with content tailored to the specific needs of the different industry sectors, one of which was our *Heat Pumps for Domestic Hot Water Applications: System Options and Case Studies*. Focusing on emerging solutions for decarbonizing hot water loads, our subject matter experts took a deep dive into solutions for DHW applications ranging from distributed to centralized systems, case studies, and operating data.

**“Vancouver’s Zero Emissions Building Plan, and the adoption by other municipalities of the BC Energy Step Code, has initiated a rapid transition towards much more efficient, healthy, and resilient buildings. Industry leaders are already striving to design, provide equipment for, and build near zero carbon buildings. For Vancouver to achieve zero emissions in newly permitted buildings by 2025, we need organizations like ZEBx to accelerate this work by supporting partnerships and knowledge sharing across the building industry. ZEBx is demonstrating success in industry capacity-building in the construction and retrofit sector, which is vital to our climate emergency response.”**

- Mayor Kennedy Stewart, City of Vancouver

# BUILDING CAPACITY THROUGH KEY PARTNERSHIPS

ZEBx has formed key partnerships with BCIT and BC Hydro to develop and deliver industry content, ranging from hands-on workshops for practitioners to focused technical dialogues with specific industry groups – and much more to come in 2019-2020.

“The relationship with ZEBx in the past year has been very beneficial to BCIT and the industry we serve. Through our partnership, we've been able to increase the amount of activities organized for industry. ZEBx creates much added value to the work we do at the BCIT Zero Energy Buildings Learning Centre.”

- Alexandre Hebert, Manager, Zero Emissions Buildings  
and Energy Systems Application  
BCIT



A key strategy to rapidly advance effective programming in ZEBx's early years was to partner with existing high-performance buildings education provider, Passive House Canada (PHC). The ZEBx funded Vancouver-based PHC staff contributed significantly to the remarkable growth PHC experienced in both educational and event programming in the region.

“PHC's partnership with ZEBx has been an excellent example of the synergy that exists when two aligned organizations work together to reach a common goal.”

- Rob Bernhardt, CEO  
Passive House Canada

**25**

EDUCATIONAL  
COURSES + EXAMS

**35**

PROGRAMMING  
FOCUSED EVENTS

**05**

COMMUNITY  
EVENTS

**02**

LARGE SCALE  
CONFERENCES

ZEBx led and partnered events and education engaged over **3,450** participants in Vancouver.

## INVESTING IN THE FUTURE

We partnered with Petit Architect to host a one-day interactive workshop to teach youth about the importance of energy efficient buildings and resilient cities. The children had the opportunity to design and construct their own mini passive house. By the end of the day, the room was filled with statements like “nice shading!” “cool solar panels,” and “my windows are triple glazed!” We have since passed on this partnership to Passive House Canada to scale the program and support its adoption into mainstream education.



## LEARNING THROUGH DEMONSTRATION

To help broaden the common understanding of how high-rise residential buildings can meet the next generation of zero emission or net-zero energy ready standards, we built two full-size, high performance wall mock-ups with BCIT and invited high rise developers, architects and engineers to interact with the products, their manufacturers, and users. The event was so successful that we partnered with Flynn Canada to build four more large mock-ups showcasing a number of high-performance envelopes.



Demand for demonstrated solutions allowed us to partner with BC Housing and BCIT to develop a live, in-lab webinar for over **300** participants across the Province. The mock-ups were donated by ZEBx to the BCIT High Performance Building Lab to further enhance and expand their hands-on zero energy trades training.

**“[During ZEBx’s High Performance Brussels Tour] I was both impressed and relieved to hear how the Brussels regional government and the building industry seamlessly made the transition to the Passive House standard in all building types, including mixed-use high rise, in a short amount of time. We saw thriving construction activity during our tour — the Brussels skyline was lined with tower cranes. Our turn is coming quickly as Vancouver and BC have legislated similar performance goals through the Zero Emissions Building Plan and the BC Energy Step Code.”**

- Jonathan Silcock, Director of Development  
Concert Properties

# 83%

**of industry participants  
provided positive  
feedback to our event  
programming.**

# OUR PROGRAM HIGHLIGHTS

Over the past year, we have hosted, co-hosted and supported a total of eight programs targeting the unique needs of the different industry sectors. These include research projects, case studies, mentorships programs, and provincial advisory boards.

## INDUSTRY RESOURCES

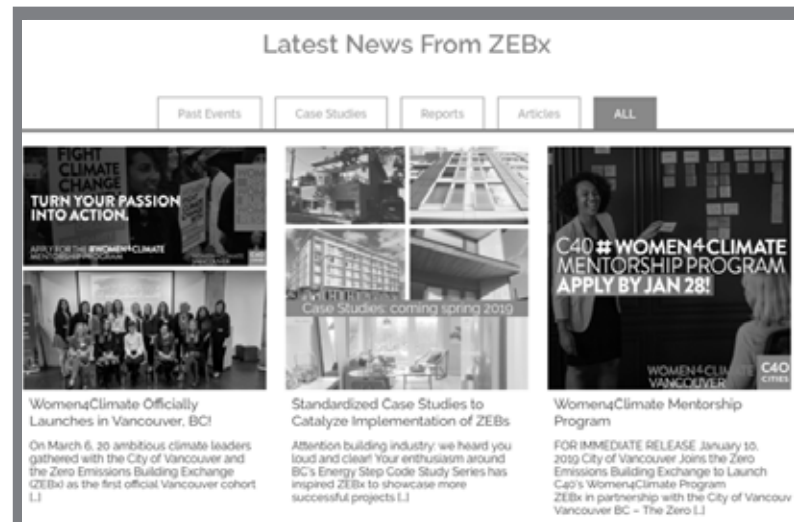
ZEBx.org hosts a number of industry resources, including case studies from across the globe that are relevant to the local market. We have also developed our own standard Case Study template and delivered our first three case studies on local projects, focusing on key lessons learned.

ZEBx has developed a key partnership with UBC's Sustainability Initiative, an organization focused on integrating and enhancing sustainability themes into teaching, learning, and student engagement activities, supporting interdisciplinary urban research, advancing regional and international engagement and more. Led by our Research Manager, this research collaboration focuses on answering key industry questions with the help of related academic research and local projects.

## RESEARCH

In our first year, we facilitated two multi-stakeholder research projects; one focused on identifying the local barriers to achieving internationally recognized performance levels for high rise multi-unit residential buildings, and the other supporting capacity building for the BC Energy Step Code, while documenting lessons learned for the rest of Canada.

ZEBx has also partnered with Passive House Canada to deliver the NearZero program, aimed at catalyzing near zero emission single-family and small multi-family homes. The program provides an incentive in exchange for design, construction and operating data so that we can identify key lessons learned for these early projects and overcome common barriers for scaled implementation.



ZEBx's online industry resource library.



ZEBx's standardized case study: executive summary page.

# WOMEN4CLIMATE MENTORSHIP PROGRAM

We have partnered with the City of Vancouver to launch the Women4Climate Mentorship Program. Developed by the global climate network C40, Women4Climate matches mayors, city officials and committed leaders from the business sector, international organizations and community organizations with emerging women leaders. Vancouver's mentees are focused on developing and optimizing solutions for scalable low energy building solutions, with a direct focus on greenhouse gas reductions.



## INDUSTRY SUPPORT

Keeping a pulse on industry's trends is critical to achieving our mandate as a building centre of excellence. Because of this, in our past year of operation, we have dedicated time towards supporting initiatives through the participation on several industry advisory committees. Our Executive Director co-chairs both the Technical Review Panel and Selection Committee of the Province's Net-Zero Energy Ready Challenge and the Energy Step Code Council's Capacity Building and Communications Sub-Committee, and serves on several steering committees for research projects aimed at addressing barriers to advancing zero emission buildings.



**"ZEBx is the culmination of efforts from all the critical sectors involved in the region's construction industry. This willingness to work collaboratively helps our community, province and country to elevate our skills to build better, safer, more cost effective, low carbon and higher performing buildings that not only enhance our lives but, dare I hope, even IMPROVE our environment."**

- Peter Moonen, Municipal Affairs & National Sustainability Manager  
Wood WORKS! BC

# OUR FINANCIAL OVERVIEW

**APRIL 1, 2018 - MARCH 31, 2019**

REVENUE	ACTUAL 2018 - 2019	OPERATING BUDGET 2018-2019	VARIANCES
Core Funding - City of Vancouver	\$350,000	\$350,000	\$0
Core Funding - CNCA, REFBC, Bullitt	\$228,044	\$228,044	\$0
Funding - Additional Programming	\$284,357	\$16,667	\$267,690
Events	\$17,935	\$20,000	- \$2,065
Travel Grant	\$1,600	\$0	\$1,600
<b>TOTAL</b>	<b>\$881,936</b>	<b>\$614,711</b>	<b>\$267,225</b>

EXPENSES	ACTUAL 2018 - 2019	OPERATING BUDGET 2018-2019	VARIANCES
Staff Salaries & Overhead	\$211,629	\$240,000	(\$28,371)
VRCA Contract Admin.	\$60,000	\$60,000	\$0
Website	\$26,155	\$50,000	(\$23,845)
Professional Services	\$55,560	\$60,000	(\$4,440)
Office	\$12,982	\$25,500	(\$12,518)
Banking and Legal	\$1,167	\$4,000	(\$2,833)
Professional Development	\$979	\$5,000	(\$4,021)
Events	\$22,765	\$17,900	\$4,865
Passive House Canada	\$91,667	\$91,667	\$0
Projects and Programs	\$257,035	\$0	\$257,035
Rent	\$27,675	\$27,600	\$75
Travel	\$2,588	\$5,000	(\$2,412)
<b>TOTAL</b>	<b>\$770,202</b>	<b>\$586,667</b>	<b>\$183,535</b>

# A SPECIAL THANKS TO OUR SUPPORTERS

## FOUNDING PARTNERS

ZEBx was founded through seed funding from the **City of Vancouver**, with additional financial support provided by the **Real Estate Foundation of BC**, the **Bullitt Foundation**, and the **Carbon Neutral Cities Alliance**.

ZEBx is hosted by the **Vancouver Regional Construction Association**, with partners **Passive House Canada** and **OPEN**.

## THANK YOU

In our first year of operation, we received an overwhelming amount of support from industry through in-kind contributions, sponsorship and partnerships. This support is critical to the development of our programming and resources aimed at catalyzing zero emission building solutions and directly supporting industry's needs.

### PROGRAM & EVENT SPONSORS

BC Housing  
BC Hydro  
Blackcomb Façade  
Bosa Properties  
British Columbia Institute of Technology  
Delta Land Developments Ltd.  
Flynn Canada  
LFV Vancouver  
Natural Resources Canada  
Perkins + Will  
RAICO  
University of British Columbia  
Vancouver Economic Commission  
Vancouver Public Library  
ZGF Architects

### PROMOTIONAL SUPPORT

BC Energy Step Code  
North American Passive House Network  
Passive House Canada  
Pembina Institute  
Vancouver Regional Construction Association

### EVENT SPEAKERS

A2M Architecture	North American Certifiers Circle
Actiris.Brussels	Peak Construction Group
Altiplan Architects	Peel Passive House
AME Group	RDH Building Science
Building Energy Exchange	Sharc Energy Systems
Citydev.Brussels	Smak Architects
Cornerstone Architecture	
GMC Projects	
HCMA Architecture + Design	
Hub.Brussels	
Immo BAM	
Integral Group	
Kairos	
Leefmilieu.Brussels	



# Zero Emissions Building Exchange

## EVENTS DELIVERED

A total of 35 events delivered in 2018-2019, reaching over 2,830 participants.

### Workshops

- Heat Pumps for Domestic Hot Water
- High-Performance Curtain Wall

### Conferences

- BuildEx
- Passive House Conference

### Demonstrations

- BC Housing: Build Smart - Key Considerations for High-Performance Walls Webinar
- CORE Energy Recovery Facility
- International Brussels Tour
- James Dean's Open House (PHC partnership)

### Community

- Communities of Practice
- Community Lunch 'n' Learn
- High-Performance Developers Dinner
- Inclusion in Passive House x2 (PHC partnership)
- Industry Christmas Party
- Industry Cluster Pecha Kucha
- LFV Earth Day Celebration
- Passive House Intro for Kids
- Passive House Socials x10 (PHC partnership)
- ZEBx Launch

### Dialogues

- BE-Ex livestream: Carbon Neutral by 2020
- BE-Ex livestream: Passive House Towering in NYC
- High Density Passive House
- PHPP User's Group/Passive House Technical Group x4 (PHC partnership)

## EDUCATION DELIVERED

Through our ZEBx led and partnered education, we delivered over 16,930 participant training hours, totalling over 620 education participants.

### Passive House Canada Partnered

- Exam Prep - Passive House Designer/Consultant Exam x3
- Intro to Passive House High Performance Buildings x4
- Passive House Design and Construction x10
- Understanding and Working with PHPP x7

### Industry Partnered

- HVAC in Large Passive House Buildings
- Passive House Building Certification

## PROGRAMS DELIVERED

- C40'S Women4Climate Mentorship Program - <https://www.c40.org>
- NearZero - <http://nearzero.ca>
- ZEBx Case Studies - <https://zebx.org/resources/#case-studies>

Stay up-to-date on the latest ZEBx and industry events, research, news and more by signing up to our monthly newsletter at <http://bit.ly/zebx-news>



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