ROBERTO PECORA, DIRECTOR

RR-2

CITY OF VANCOUVER

POLICY REPORT
DEVELOPMENT AND BUILDING

Report Date: July 5, 2016
Contact: Sean Pander
Contact No.: 604.871.6542
RTS No.: 11195
VanRIMS No.: 08-2000-20
Meeting Date: July 12, 2016

TO: Vancouver City Council

FROM: Green Building Manager, Sustainability Group

SUBJECT: Zero Emissions Building Plan

RECOMMENDATION

A. THAT Council approve the Zero Emissions Building Plan (attached as Appendix A) and adopt a target to reduce emissions from new buildings by 90% as compared to 2007 by 2025 and to achieve zero emissions for all new buildings by 2030 including intermediary time-stepped GHG emission and thermal energy demand targets as described in the Plan.

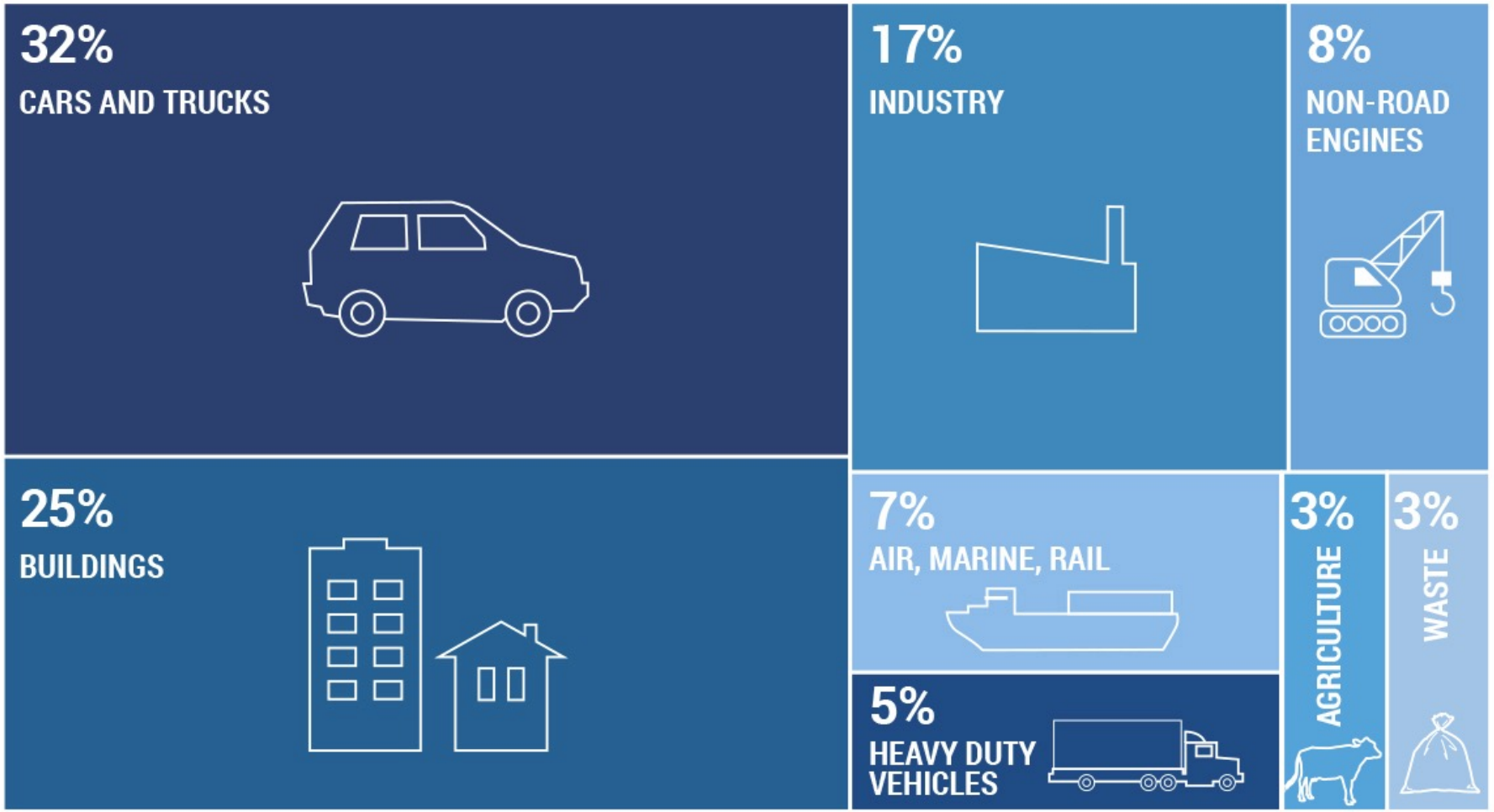
B. THAT Council direct staff to report back with specific recommendations to reflect the first step of these limits in the Rezoning Policy for Green Buildings and Vancouver's Building Bylaw along with any synergistic updates to Neighbourhood Energy connection requirements by Q1 2017.

C. THAT Council direct staff to build all new City-owned and Vancouver Affordable Housing Agency (VAHA) projects to be Certified to the Passive House standard or alternate zero emission building standard, and use only low carbon fuel sources, in lieu of certifying to LEED Gold unless it is deemed unviable by Real Estate and Facilities Management, or VAHA respectively, in collaboration with Sustainability and report back with recommendations for a Zero Emissions Policy for New Buildings for all City-owned and VAHA building projects by 2018.

D. THAT Council direct staff, in consultation with industry, to develop a three year, $1.625 million Zero Emissions Home Program for detached and row houses ($325K in 2017 from the Climate Action Rebate Incentive Program Reserve, $650K in 2018 and $650K in 2019 from a funding source to be determined and reported back to Council), and report back to Council with specific recommendations for tools to catalyze leading builders to demonstrate cost effective approaches to building zero emissions homes by 2017.

F. THAT Council approves in principle $700,000 over three years ($300K in 2017, $200K in 2018, and $200K in 2019 from the City's 2017 Innovation Fund, subject to Council approval of the 2017 Innovation Fund budget) towards establishing a non-governmental Zero Emissions Building Centre of Excellence with the mission to facilitate the compilation and dissemination of the knowledge and skills required to design, permit, build and operate zero emission buildings in BC, and direct staff to engage partners, secure matching funding, consult with stakeholders and report back with recommendations for implementation in 2017.

metrovancouver GHG Emissions Sources (2019)



Metro Vancouver's 2030 goal is a 35% reduction in GHG emissions from buildings (from 2010 levels).

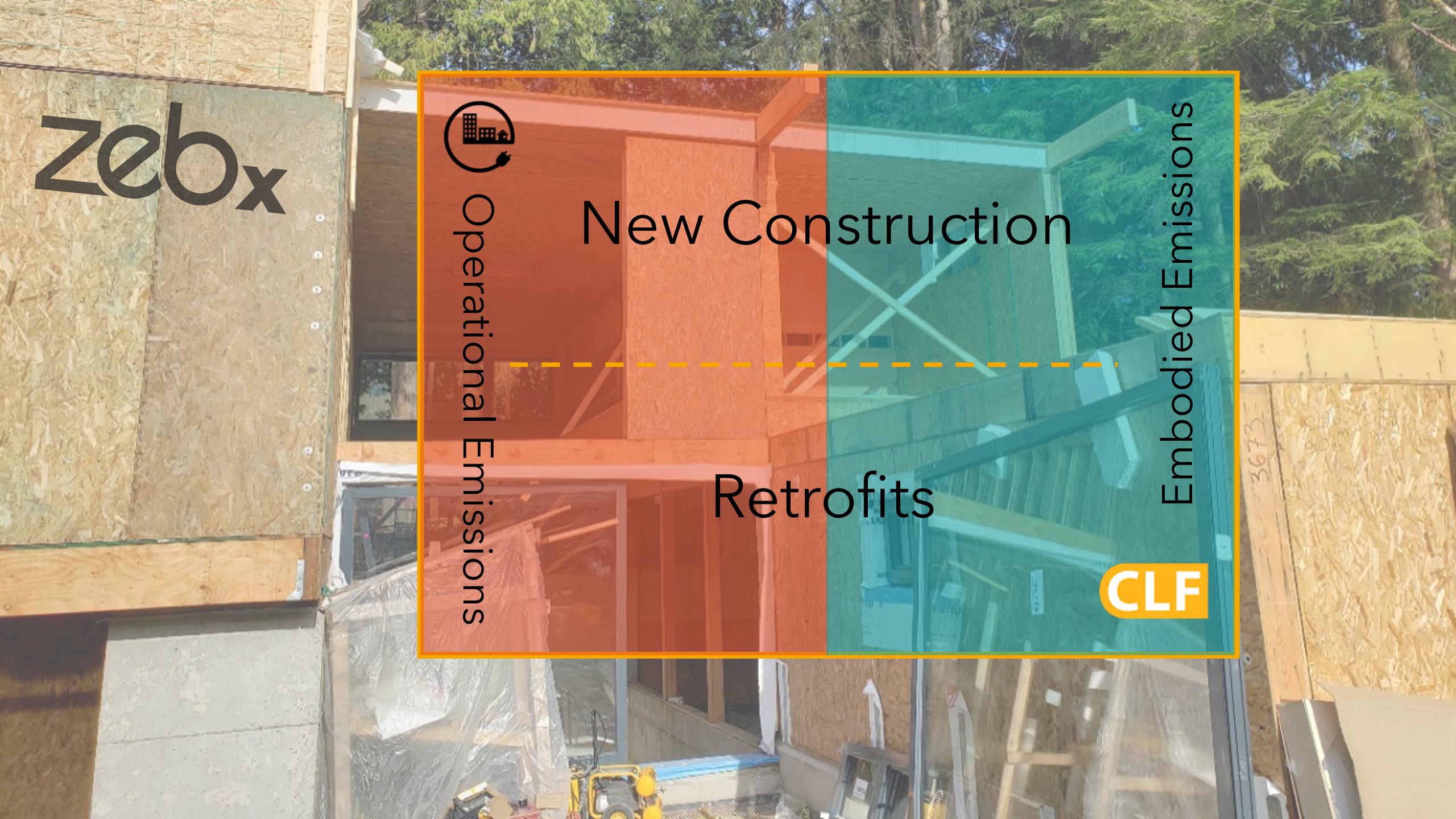
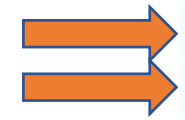

zebx
Operational Emissions
New Construction
Retrofits
Embodied Emissions
CLF

Figure 6 – Indirect GHG Emissions Factors for Electricity in Canada

Province	CO_{2eq} Emissions (kg/MBtu)	CO_{2eq} Emissions (g/kWh)
Alberta	202.23	690.0
British-Columbia	3.84	13.1
Manitoba	0.41	1.4
New Brunswick	84.99	290.0
Newfoundland and Labrador	7.91	27.0
Northwest Territories	46.89	160.0
Nova Scotia	216.88	740.0
Nunavut	260.84	890.0
Ontario	8.79	30.0
Prince Edward Island	84.99	290.0
Quebec	0.47	1.6
Saskatchewan	219.81	750.0
Yukon	23.15	79.0
National Average	**38.10**	**130.0**



Canada – Electricity

Indirect emissions for electricity in Canada are computed based on the province, to account for differences in electric generation, transmission, and distribution methods. The electric factors for emissions in each region are presented in ***Figure 6***. These values are determined based on the National Inventory Report submitted by Canada to the United Nations Framework Convention on Climate Change.[13]

C. Compliance Path #1: Prescriptive

PATH 1 VBBL ARTICLE 10.2.1.5. PRESCRIPTIVE COMPLIANCE PATHWAY REQUIREMENTS

Roofs
- **R1** RSI 5.28 (R-30)
- **R2** RSI 7.0 (R-40)

Glazing
- **G1** Average USI 1.04 (U-0.18), no individual window above USI 1.22 (U-0.21)
- **G2** USI 1.22 (U-0.21)

Exposed Floors
RSI 4.2 (R-24)

Below-Grade Walls
RSI 3.85 (R-22)

Heat Pumps
Requirements by system type as per 10.2.2.14

Heat Recovery Ventilators
- **R1** 65% SRE Efficiency
- **R2** 75% SRE Efficiency

All other minimum prescriptive and mandatory requirements outlined in VBBL Section 10.2.2.

Skylights
- **S1** USI 2.44 (U-0.42)
- **S2** USI 2.95 (U-0.52)

Attic Roofs
RSI 8.5 (R-48)

Above-Grade Walls
RSI 3.85 (R-22)

Glazed Doors
USI 1.8 (U-0.317)

Under Slab
RSI 2.5 (R-14)

Air Leakage Rate
- **A1** 2.0 L/s/m² at 75 Pa
- **A2** 2.5 ACH_{50}
- **A3** Normalized leakage area of 1.7cm²/m² at 10 Pa

- **R1** House total conditioned space < 110 m² (1,184 ft²)
- **R2** House total conditioned space ≥ 110 m² (1,184 ft²)
- **S1** Skylights ≤ 1.22 m (4ft) in both directions
- **S2** Skylights > 1.22 m (4ft) in both directions
- **G1** Window-to-wall ratio ≥ 30% and/or one dwelling unit with conditioned space ≥ 325 m² (3,500 ft²)
- **G2** All other buildings
- **A1** Buildings, excluding those containing not more than two principal dwelling units and ground-oriented dwelling units
- **A2** Ground-oriented dwelling units
- **A3** Ground-oriented dwelling units alternative measure

Appliances for Space Heating and Hot Water – For the 2022 VBBL Update, this pathway **does not allow** for the use of gas-fired appliances for hot water or spacing heating systems, except for gas fireplaces which have a limit on combined total rated input of < 60,000 BTU/hr from all gas fireplaces within a building. Otherwise, all systems must use electricity, such as an electric hot water tank or electric heat pump.

Decarb Lunch Series

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CITY OF VANCOUVER

Legendary Airtightness

The Most Airtight Homes of the NearZero Program

Wed Apr 27, 2022,
from 12- 1pm PDT
Free Webinar | zebx.org

BCIT™ BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

Exterior wall, R32

Vapour barrier paint

½” drywall

2x6 studs with fiberglass batt insulation

½” plywood

Siga Majvest 500 SA air barrier

4” cascadia clip with Cavity Rock insulation

Hardieplank horizontal siding

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**

May 2022

Workshop | **Presented by: Passive House Canada**

May
25
Wednesday
8:00am - 5:00pm

PASSIVEHOUSE CANADA

Passive House Canada Annual Conference

Webinar | **Presented by: Energy Save NW**

May
26
Thursday
8:00 - 9:30am

ENERGY SAVE NEW WEST

Spring 2022 Builder & Designer Breakfast

‹ › **May 2022**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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
29	30	31	1	2	3	4
5	6	7	8	9	10	11

To submit events for your organization:

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Be Prepared!

The BC Energy Step Code Capacity Study

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

VANCOUVER ECONOMIC COMMISSION

HOW do we train?

On Site	**Blower-Door Day**
On Site	**Employee-led mentoring/teaching**
On Site	**Supplier Training**

Categories:

- [ ] Articles
- [ ] Case Studies
- [ ] Past Events
- [x] Podcasts
- [ ] Reports
- [ ] Videos & Slides

Series:

- [ ] Decarb Lunch
- [ ] Deep Emissions Retrofit Dialogue
- [ ] NZER Challenge Playbook Series
- [ ] NZER Challenge Winners Series
- [ ] Tech Demonstration

Systems:

- [ ] Building Enclosure
- [ ] Domestic Hot Water Heat Pump
- [ ] Geothermal
- [ ] Mechanical
- [ ] Solar Energy

Subjects:

- [ ] All-Electric Building

The ZEBx Decarb Lunch Podcast: Feb 2022, Be Prepared! The BC Energy Step Code Capacity Study

The ZEBx Podcast Decarb Lunch Jan 2022: Reducing Embodied Carbon for Step Code Homes

The ZEBx Podcast Decarb Oct 2021: From Net-Zero E Near-Zero Emissions

Decarb Lunch Series

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BC Hydro
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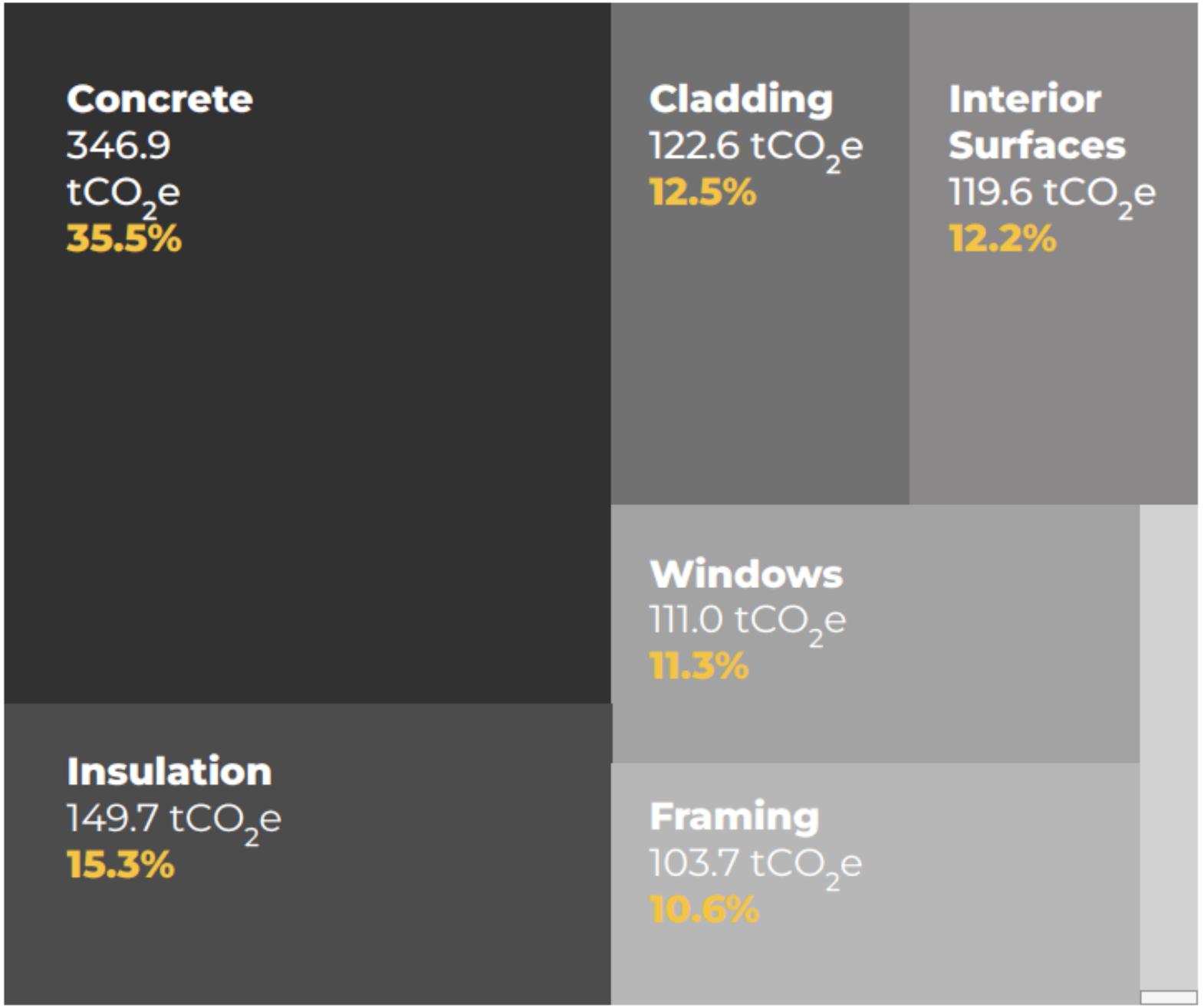
CITY OF VANCOUVER

Reducing Embodied Carbon for Step Code Homes

Fri Jan 28, 2022,
from 12- 1pm PST
Free Webinar | zebx.org

CLF Carbon Leadership Forum Vancouver



Average of all materials from all homes in study

NearZero.ca

A green initiative sponsored by the City of Vancouver and CleanBC to gather data and encourage the construction of more high-performance homes.

PROJECT BROUGHT TO YOU BY:

PASSIVEHOUSE CANADA Build better. Feel better.

CITY OF VANCOUVER

GREENEST CITY

ZEBx ZERO EMISSIONS BUILDING EXCHANGE

cleanBC our nature. our power. our future.

Home About NearZero Overview Requirements Deliverables Compensation ZEBx Register

Thank-you

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