

Decarb Lunch

Series

zeb x

 **BC Hydro**
Power smart

 **CITY OF
VANCOUVER**

Vancouver's New Green Building Regulations

**Fri Jun 24, 2022,
from 12- 1pm PDT
Free Webinar | zeb.org**

UDI **URBAN
DEVELOPMENT
INSTITUTE
PACIFIC REGION**

mood provided by: AK
song: Tiny Molecules of Water

PODCASTS



**The ZEBx Podcast is now on
Spotify, Apple & Google**

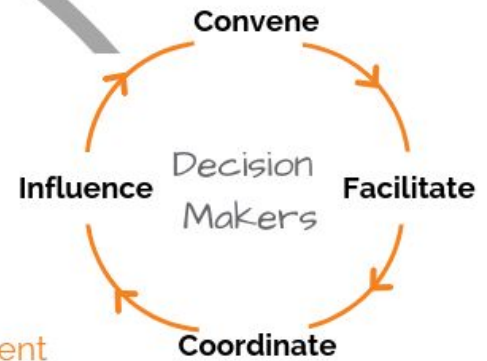


COLLABORATE
Accelerate Solutions

~~ADVANCE~~ **ACCELERATE**
Remove Barriers &
Identify Opportunities



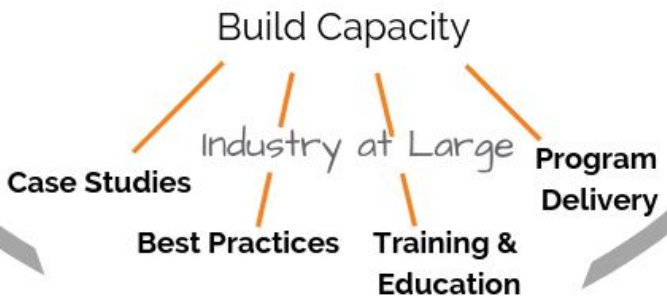
zebx
"connecting industry to solutions"



Designers
Builders
Academia
Developers
Manufacturers

Government
Global Experts
Mission-Aligned Organizations
Industry Associations

SCALE



zebx.org

We are a broad **coalition working together** to electrify buildings in British Columbia in order to reduce their climate impacts and reliance on fossil fuels.





Become a Member

Becoming a member of B2E is simple and free. As a member you will enjoy the following benefits:

- Numerous collaboration opportunities with industry leaders through working groups, subcommittees, B2E events, case study development, and publishing online articles;
- Early access to building electrification news, updates and events;
- Recognition on B2E website and acknowledgement that your organization is fully engaged in the decarbonization of the building sector.

[Join B2E](#)

What is Building Electrification?

Building electrification is about making the shift away from fossil-fuels and using low-carbon electricity for space heating, hot water and cooking.

Instead of using natural gas or propane to run appliances like furnaces, kitchen stoves, washers and dryers, everything is electric.

Read more about building electrification on our FAQ page.

[View FAQ](#)

The logo for the Carbon Leadership Forum (CLF) consists of the letters 'CLF' in a bold, white, sans-serif font, enclosed within a solid orange square.

Carbon
Leadership
Forum
Vancouver

joins

The logo for ZEBx features the word 'zeb' in a lowercase, rounded, orange font, followed by a lowercase 'x' in a grey font.

ZEBx is proud to announce the **Carbon Leadership Forum, Vancouver** has joined our organization.

APRIL 2022

clfvancouver.com

Detached Homes

Of the total emissions from existing buildings, detached homes account for 28%, the largest portion across all building types.



Initial Proposed Regulations

The following initial regulatory updates are proposed (changes to the Building By-law are provided in Appendix A):

Proposed Regulation	Description
1) Two-way air conditioner equipment standards <i>(effective January 1, 2023)</i>	In the Vancouver Building By-law, require plumbed and/or hard wired air conditioning (not including portable systems which are not hard wired) to install an electric two-directional heat pump that also provides zero emissions heat.
2) Major home renovations <i>(effective January 1, 2023)</i>	In the Vancouver Building By-law, renovations with a construction value over \$250,000 will be required to electrify their existing space heating and hot water systems.

Further to the above, miscellaneous clarifications and errata to the affected provisions and the notes in the Building By-law with respect to existing building and energy efficiency language are included to better support users of the Code.



ZERO EMISSIONS BUILDING EXCHANGE



Operational Emissions

New Construction

Retrofits

Embodied Emissions



the top5

- ZEBx Podcast - SFU Parcel 21: Achieving Step 4 at Conventional **Construction Budgets**
- ZEBx Case Study - Deep Emissions **Retrofit** of a 1968 Office Tower
- ZEBx Podcast - Developer/Builder Recipes For **Low-Cost, All-Electric**, Step 4 Residential Construction
- B2E Case Study - Decarbonization Through **HVAC Retrofits**: Solutions for Small Commercial Buildings
- B2E Case Study - Reducing Carbon Through **Heat Recovery**: Lessons Learned From Park Place



POLL 1

Tell us about yourself!

Three-part anonymous poll



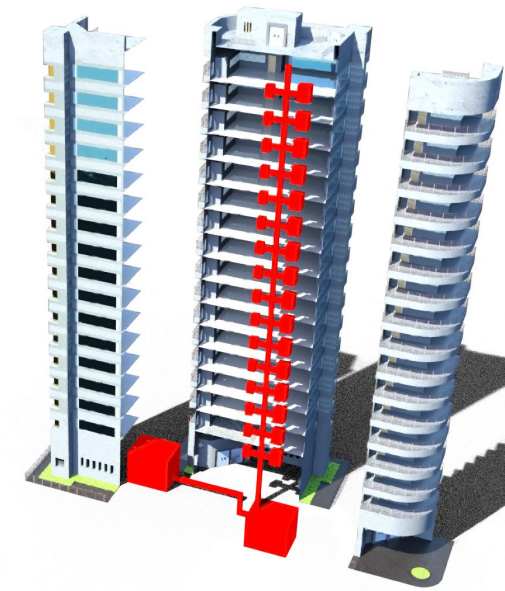
ZEBx Decarb Lunch

Vancouver's New Green Building Regulations

Jeff Fisher

Vice President & Senior Policy Advisor

June 24, 2022



ABOUT UDI

- Non-partisan, non-profit org., 950+ members across B.C.
- Chapters in Lower Mainland, Capital Region & Okanagan.
- We represent residential (strata & rental), commercial, institutional, industrial & resort builders.
- Our members include thousands of individuals involved in all facets of real estate, land development and planning.
- Since 1972, UDI has concentrated its activities in three primary areas:
 - Communicating on behalf of the industry;
 - Policy & Government Relations; &
 - Education & Professional Development.



BC DEVELOPMENT INDUSTRY'S ECONOMIC IMPACT

\$22.9 BILLION IN GDP GENERATED THROUGH...

The real estate development industry is a key driver of British Columbia's economy. The industry generates a diverse range of jobs to support each stage of the development process, from financing, to construction, to sales, and property management. Development revenues collected by municipalities are reinvested in local communities in the form of new public services and amenities.

233,600 JOBS CREATED



TAXATION IMPACTS \$6.6 BILLION

GOVERNMENT REVENUES FROM THE DEVELOPMENT INDUSTRY INCLUDE:

- Property Transfer Tax (PTT)
- Provincial Sales Tax (PST)
- Development Cost Levies (DCLs)
- Community Amenity Contributions (CACs)
- Goods and Service Tax (GST)
- Property Tax
- Development Cost Charges (DCCs)

WE ARE
**BC'S
LARGEST
INDUSTRY**



BRITISH COLUMBIA
REAL ESTATE
ASSOCIATION

This *Economic Impact of the Development Industry 2016 report* was prepared by the independent accounting, tax and business group MNP in February 2018, with financial contributions from the following partners: Urban Development Institute, the British Columbia Real Estate Association, and the Greater Vancouver Home Builders' Association.

Designed by



UDI and Sustainability

“As a ‘Partner in Community Building,’ the Urban Development Institute is committed to working with communities and governments to create and achieve the vision of balanced, well-planned and sustainable communities.”

- UDI was involved in developing in the *Energy Step Code* and continues to be an active participant on the ESC Advisory Council.
- UDI is actively supporting CLT construction and participated on the Provincial Mass Timber Advisory Council.
- We are working with BC Housing on their Mobilizing Building Adaptation and Resilience Initiative.
- At the local level, we review municipal sustainability polices through Liaison Committees

Transit Oriented Development



Future Events

September

UDI Webinar:

Mass Timber Action Plan

UDI Project Tour:

Mass Timber Manufacturing Facility

October

UDI Seminar:

High Performance Building Program

UDI Events Calendar: <https://udi.bc.ca/events/list/>





THANK YOU

UDI

PACIFIC REGION URBAN
DEVELOPMENT
INSTITUTE

Jeff Fisher, Vice President and Senior Policy Advisor

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POLL 1

What did you tell us about yourself?



City of Vancouver New and Existing Building Updates

2022 06 24

Charling Li
Green Building Engineer

Micah Lang
Senior Green Building Planner

Patrick Enright
Senior Green Building Engineer



Vancouver
Plan





New building updates

4

ZERO EMISSIONS
SPACE AND
WATER HEATING

By 2030, the carbon pollution from buildings will be cut in half from 2007 levels.

Build industry capacity

5

LOW CARBON
MATERIALS AND
CONSTRUCTION
PRACTICES

By 2030, the embodied carbon from new buildings will be 40% less than 2018 levels.

Support early owner action

Set carbon pollution limits + streamline regulations

State access to renewable energy

Carbon pollution requirements for new developments

Approved policies

BIG MOVES

4+5

NEW BUILDINGS



Approved policies

BIG MOVES

4+5

NEW BUILDINGS



2023

GHGI = 3 for 4-6 story residential;
50% GHG reduction for industrial/care/assembly

2025

GHGI = 3 for high rise & commercial;
Include refrigerant impact in GHGI;
85% GHG reductions for industrial/care/assembly

Approved policies

BIG MOVES

4+5

NEW BUILDINGS

#1
ENERGY +
CARBON

VBBL

#2
RESILIENCE

VBBL

#3
EMBODIED
CARBON

VBBL

#4
STREAM-
LINING

REZONINGS

2023

MERV 13 filtered air

2025

require cooling in dwellings

Approved policies

BIG MOVES
4+5
NEW BUILDINGS



2023
reporting only
2025
10-20% reductions +
sustainable sourcing

Approved policies

BIG MOVES

4+5

NEW BUILDINGS

#1
ENERGY +
CARBON

VBBL

#2
RESILIENCE

VBBL

#3
EMBODIED
CARBON

VBBL

#4
STREAM-
LINING

REZONINGS

IMMEDIATELY

remove requirements except
rainwater management,
enhanced commissioning &
energy system sub-metering

intake reports @ rezoning
for energy & emissions,
embodied carbon & resilient
buildings

Implementation supports

BIG MOVES
4+5
NEW BUILDINGS



VBBL

UPDATE Energy Modelling Guidelines

VBBL

NEW Resilient Buildings Planning Worksheet

VBBL

NEW Embodied Carbon Guidelines;
NEW Embodied Carbon Design Report submittal;
NEW Embodied Carbon Centre of Excellence;
Create case studies

REZONINGS

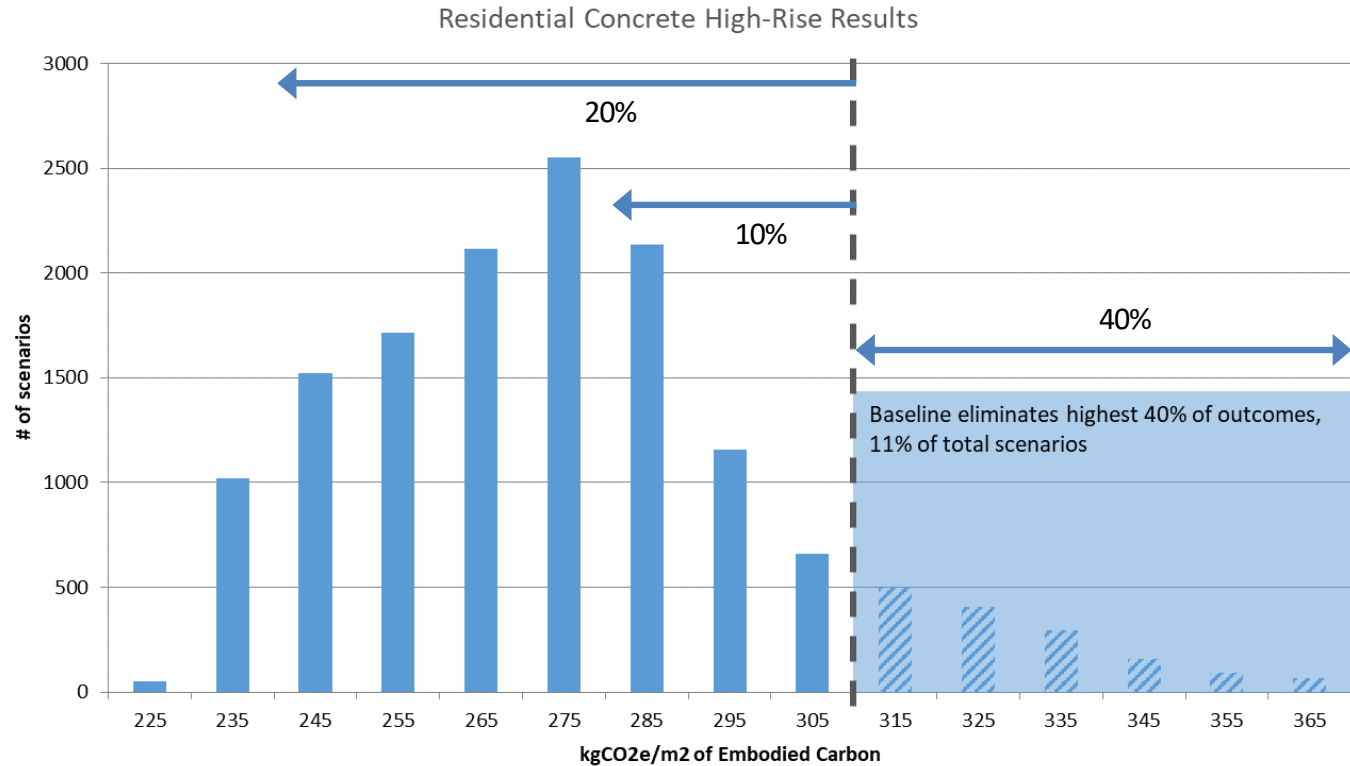
Standardized submittals

Council direction

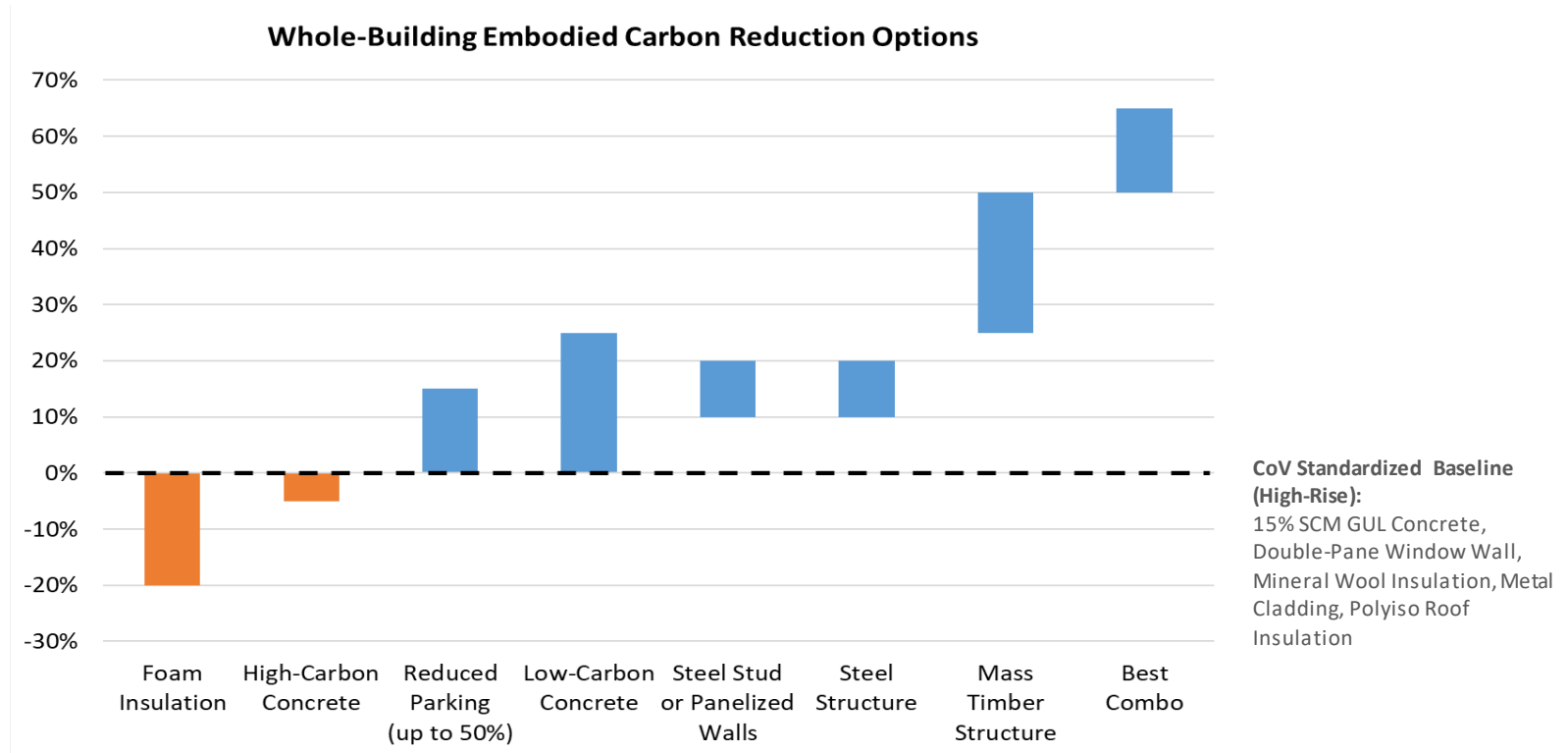


- prioritize electrification over renewable gas wherever possible in new and existing buildings
- explore options to remove gas cooking, fire places and other uses in all new residential buildings

Embodied carbon



Embodied carbon



**estimates based on 2021 report for CoV by Morrison Hershfield*

Carbon Pollution Regulations & Supporting Programs

Existing Large Commercial & Multifamily
Buildings

June 24, 2022



Outline

Part 1: Approved Actions for Commercial & Multifamily Buildings

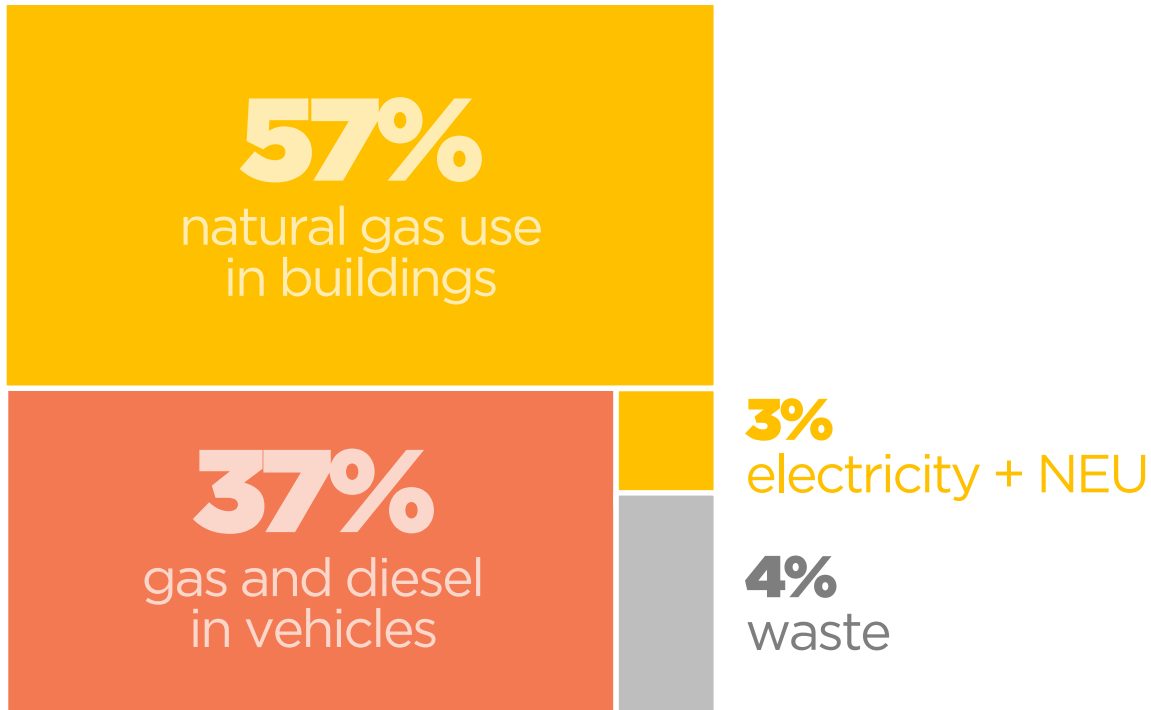
Part 2: What's Coming Next





Part 1 **Approved Regulations &** **Supports**

Vancouver's carbon pollution



*City of Vancouver 2020
emissions inventory
(GPC, Scopes 1 and 2)
Due to rounding, numbers presented
may not add up to exactly 100%*

opportunity by building type



Detached homes

78,800 homes

28% of total
GHG's

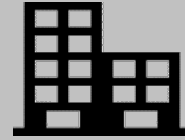


Multi-Family Residential*

6,115 buildings

24% of total
GHG's

*incl. rental, non-market,
condos



Commercial

3,420 buildings

26% of total
GHG's

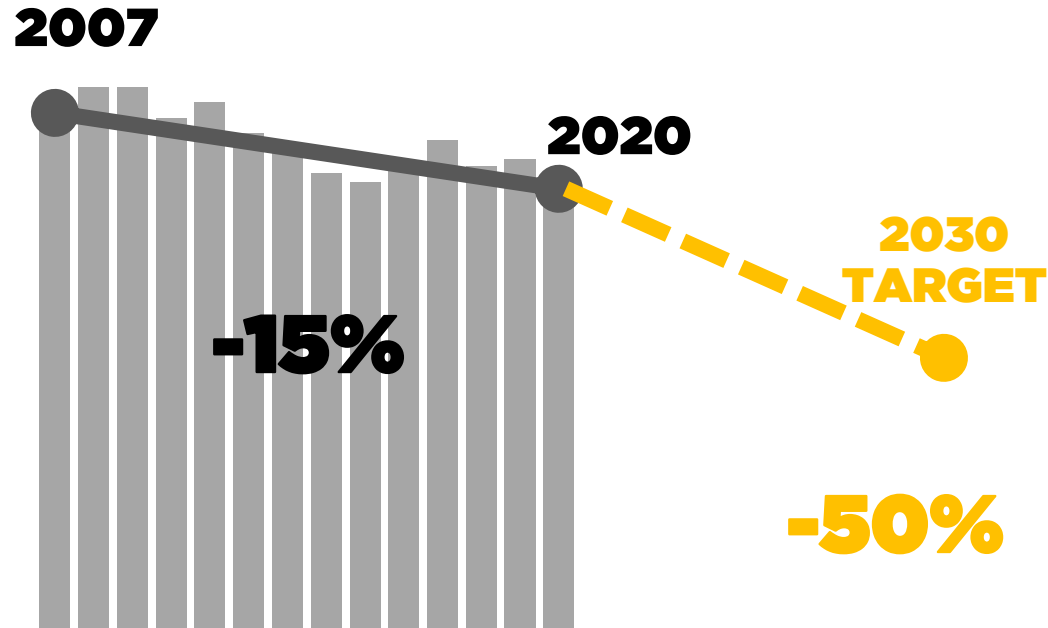
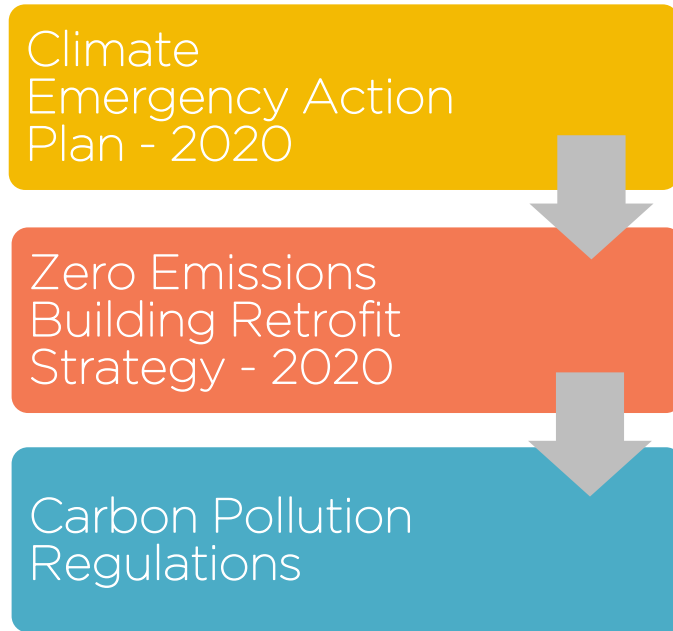


Industrial

1,081 buildings

20% total
GHG's

Vancouver's Climate Commitments



project timeline



NOV 2020
COUNCIL DIRECTION

Council provides direction to develop regulation for existing buildings.

MAY 17, 2022
COUNCIL REPORT

Recommendations to Council.

MAR - SEP 2020
INDUSTRY ENGAGEMENT

Phase 1 - Initial awareness building + engagement.

SEP 2021 - MAR 2022
INDUSTRY ENGAGEMENT

Phase 2 - Exploratory stage.
Phase 3 - Feedback on draft regulations

2022 - 2030
GRADUATED IMPLEMENTATION

Programs launched, Regulations come into effect.

Overview

- 1: Energy + Carbon Reporting
- 2: Carbon Pollution Limits
- 3: Streamline Regulations
- 4: Regulatory Roadmap
- 5: Funding for Owner Supports





1: energy + carbon reporting

what is energy and carbon reporting?



Source: City of Winnipeg

"You can't manage what you don't measure"

- **Provides data to inform effective policy and show compliance with regulation**
- **Raises owner/operator awareness of building energy use**

reporting timelines: phasing

2024

ALL COMMERCIAL >100,000ft²
(250 buildings)

2025

ALL COMMERCIAL >50,000ft²
(450 buildings)

MULTI-FAMILY >100,000ft²
(350 buildings)

2026

MULTI-FAMILY >50,000ft²
(450 buildings)



reporting & compliance process

COLLECT	<ul style="list-style-type: none">• Collect data from utilities and tenants• Create building profile on Energy Star Portfolio Manager
REPORT	<ul style="list-style-type: none">• Share 'read only access' with City of Vancouver
VERIFY	<ul style="list-style-type: none">• City verifies data for accuracy
ENFORCE	<ul style="list-style-type: none">• By-law ticketing for non-compliance
PUBLIC REPORTING	<ul style="list-style-type: none">• Optional disclosure on map• Aggregate data analysis and reporting

benchmarking support services

WE'RE HERE TO HELP

- **Online hub to access resources and best practices**
- **Benchmarking Helpdesk**
- **PM workshops**
- **'Train the Trainers'**
- **Performance Scorecards**





2: carbon pollution limits

carbon pollution limits

2022

COUNCIL
APPROVAL

2026 GHGI LIMITS ONLY

OFFICE + RETAIL
>100,000ft²

**2040 GHGI + HEAT
ENERGY LIMITS**

OFFICE + RETAIL
>100,000ft²

Approach

Follows Building Performance Standards BEST
PRACTICE: NYC, D.C., Boston, WA State, Denver.

COORDINATION with Metro Vancouver direction +
complements planned Provincial regulations.

TOP-DOWN (achieve City targets) and BOTTOM-UP
(reflective of local buildings)

carbon pollution limits

GHG Limits

- Amount of fossil-fuel based natural gas and district energy used for space heat and domestic hot water, multiplied by GHG emission factor, divided by the gross floor area of a building. **Kg CO₂e/m²/year**

Heat Energy Limits

- Measure of the total amount of gas used plus the district heat that is consumed by the building (regardless of the carbon intensity). **GJ/m²/year**

2026 GHG limits

LIMITS FOR OFFICE + RETAIL >100,000 FT²

Office 25 kg CO₂/m²/year

Retail 14 kg CO₂/m²/year

RATIONALE

- Requires action from 25% worst performing buildings (approx. 45)
- Initiates planning
- Drives implementation of cost effective, fast building commissioning and operational optimization to address energy waste



Compliance

1. **Share Portfolio Manager accounts with the City of Vancouver.**
2. **Submit proof of renewable gas and renewable district energy purchase (if applicable).**
3. **Apply for annual operating permit for all covered buildings. (\$500/building)**
 - Buildings that exceed carbon pollution limits will pay \$350/tonne of CO₂e that is emitted over the regulated limit.



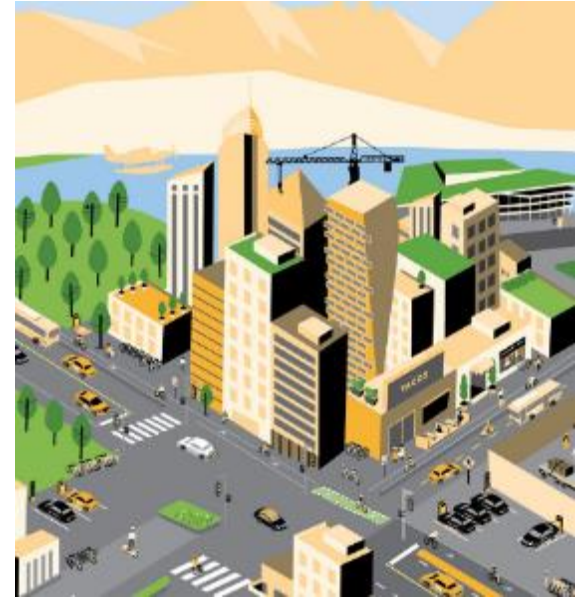
2040 GHG + Heat Energy limits

LIMITS FOR OFFICE + RETAIL >100,000 FT²

GHG Limit	0 kg CO ₂ /m ² /year
Heat Energy Limit	0.09 GJ/m ² /year <i>(25 kWh/m²/yr)</i>

RATIONALE

- 60-90% reduction in GHGs possible with a positive lifecycle cost
- Signal limits now to AVOID STRANDED INVESTMENTS
- All buildings will need major mechanical investment by 2040



2040 Limits Impacts

- There are multiple pathways to achieve GHG savings of 60-90% with a positive lifecycle cost.
- A partial fuel switch without envelope improvements will be sufficient for most buildings
 - Heat-recovery chillers
 - Heat-pump Rooftop Heating Units
 - Electric boilers with demand response
- Older buildings will eventually address envelope
- Buildings are achieving these reductions today:
www.zebx.org/resources/





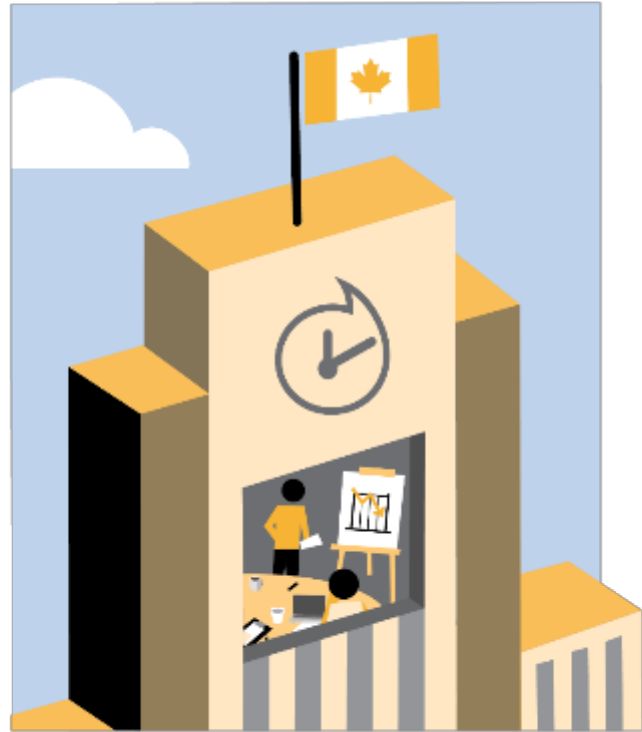
3: streamlining regulations

streamline regulations

Eliminate ENERGY UPGRADE REQUIREMENTS

VBBL Part 11

- for **ALL COMMERCIAL + MULTI-FAMILY BUILDINGS**
- Effective January 1, 2023
- these existing requirements do not typically drive the planning for building scale capital improvements necessary for deep decarbonization



4: regulatory roadmap



regulatory roadmap

APPROACH

Signal additional recommendations by 2024 to meet 2030 target.

RECOMMENDATIONS TO COUNCIL 2024

a) GHG + Heat Energy limits

additional commercial building types >50,000 ft²

b) Prescriptive measures

commercial

c) GHG limits + prescriptive measures

multi-family buildings



Roadmap

2026

Time-of-Replacement Requirements come into effect:

- Pools
- Fireplaces and decorative gas appliances
- Rooftop heating units
- Make-up-air units
- Sub-metering major equipment at time-of-replacement

2030

Updated GHG Intensity and Heat Energy Limits for Office and Retail > 100,000 FT²

2030

GHG Intensity Limits effective for:

- Office & Retail > 50,000 FT²
- Hotels > 50,000 FT²
- Other Commercial building types > 50,000 FT²
- Multi-family buildings > 100,000 FT²

2030-2032

Phased Deadlines for Equipment Replacement:

- Rooftop heating units
- Make-up-air units
- Pools
- Fireplaces and decorative gas appliances

2040-2050

GHG Intensity limits for Commercial and Multi-Family Buildings > 50,000 FT² (all uses): 0 kg CO₂e/m²/year



5: funding for owner supports

owner supports

1. Energy and carbon reporting support services
2. Financial incentive for multifamily early reporting
3. Multifamily cooling
4. Building tune-ups and recommissioning program
5. Support for 2040 retrofit planning
6. Case studies and dialogs
7. Vancouver 2030 district



A wide-angle photograph of a city skyline, likely Vancouver, viewed from across a body of water. The sky is a deep blue with wispy clouds, and the sun is low on the horizon, creating a warm glow and reflecting on the water. The city buildings are silhouetted against the sky, with some lights visible. A large, bold, white text overlay is positioned in the lower-left and center of the image.

Part 2 What's Coming Next

Timeline 2022-2025

-
- 2022
 - Website and Communication Materials
 - Initiate Research for Regulatory Roadmap
 - 2023
 - Detailed Compliance Guidance
 - Convene Technical Advisory Committee & Community Advisory Committee
 - Launch owner supports
 - 2024
 - ECR and GHGi communication
 - Engagement on Regulatory Roadmap
 - 2025
 - Draft Regulations
 - Council Report



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Thank you!