Building By-Law: Climate Emergency New Low-Rise Updates
Three Aims

Zero Emission
Zero emissions space heating + hot water and increased resilience

Alignment
Closer alignment of Vancouver’s Building By-law with Step 4 of BC’s Energy Step Code

Flexibility
Increased flexibility for builders with a performance path
Context

New Construction Focus

Aimed at new low rise residential construction and new work
Global warming relative to 1850-1900 (°C)

we can limit how hot it gets with quick responsible action

Sources: IPCC Fifth Assessment Report, IPCC Special Report on Global Warming of 1.5°C
ZERO EMISSIONS SPACE AND WATER HEATING

By 2025, all new and replacement heating and hot water systems will be zero emissions.
the biggest emissions source in Vancouver is burning natural gas for heat and hot water.
then comes burning gas and diesel in vehicles

38% ⛳️  

56% 🔥
38% and finally electricity and waste.

56%
CITY-WIDE BUILT RESIDENTIAL FLOOR AREA (2014-18)

BC ASSESSMENT (2019)

- LOW-RISE IS NEARLY 70%
- LOW-RISE (≤4 STOREYS): 5%
- MID-/HIGH-RISE (>4 STOREYS): 26%
- LOW-RISE IS NEARLY 70%
- MIXED-USE: 6%
- SINGLE-FAMILY: 55%
- DUPLEX, TH, RH, MCD: 9%
New Build Structures Approved (previous 12 months)

- Townhomes: 601
- Single Family: 369
- Laneway House: 364
- Duplex: 86
THE PRELIMINARY ROUND
Goals & Approach
Single Family Home Space Heating Needs (kWh annual, rounded)

- 2006: 20,000
- 2019: 7,000
- 2022: 1,900
Single Family Home Carbon Pollution (Tonnes Annually)

- 2006: 5.4 tonnes
- 2019: 2.8 tonnes
- 2022: 0.8 tonnes
Alignment

**Higher Buildings**
- 3kg/m² annual carbon pollution limit since 2018

**West Vancouver**
- 3kg/m² annual carbon pollution limit since March 9, 2020

**BC Energy Step Code**
- Vancouver requiring metrics of Step 4 and 3kg/m² annual
3 tonne limit at present

Large Homes 325m²+

2 tonne limit recommended
SUCCESSFUL TRIAL RUN of first heat pump to be installed in a Vancouver home brings happy grins to engineer George Remple, 5485 Manitoba, home owner Don Mackenzie, 1832 Arcadia, and refrigeration technicians C. Service, 2703 Grovelly, and B. McMillan, 1145 Ridgeway. The heat pump forces piped gas into the earth where it picks up natural warmth. The fuel is free but there is a monthly electric bill.
How it works

Heat pump

1. The system pulls cold air from the home
2. The outdoor unit absorbs heat from the cold air outside into the refrigerant
3. The refrigerant becomes warm and is sent back into your home
4. Warm air is released back into your home
How a heat pump works

Heat pump or A/C unit

1. The system pulls hot air from your home
2. The outdoor unit squeezes heat out of the refrigerant
3. Refrigerant becomes cold and is sent back into your home
4. Cool air is released back into your home
Character and Heritage
Three project types

**Modest Renovation**
No New Requirements

**Addition**
The addition is new construction and meets the VBBL in force at the time

**Reconstruction**
Meets the VBBL in force at the time
Updated bulletin for heritage and character clarifying renovations

The bulletin will give examples and outline relaxations as they apply to typical projects
Recommendation

Continue to treat new work as new

Infill, reconstruction, and additions continue to be treated as new work
Operating Costs

Most home buyers or renters will save money on a monthly basis in terms of operating costs compared to a typical home.

Up to $50/month savings

$30-$50 less to operate per month in 68% of new homes

Modest savings or increase for large homes

from $8 saved to $0-8 increase per month in 32% of new homes
Costing was completed by local builders and developers, reviewed by a costing consultant.

**Townhomes**
 Incremental construction cost averages $1.40/sq ft, or 0.1% of sale price.

**Single-Family Homes**
 Incremental construction cost is $3.90/sq ft or 0.3% of sale price.
Cost of Inaction

Delaying a zero emissions switch on new construction would mean more retrofits needed.

$6M+ added future retrofit costs for homeowners for each year delay.
What it means to a homeowner/renter

**Lower Energy Use**
- due to improved insulation

**Improved Comfort**
- with more efficient windows

**Improved Resilience + Air Quality**
- during heat and smoke events, in many cases with heat pumps
Consultation
HAVAN, UDI AIBC, EG BC

Over 50,000 individuals represented

Changes made with industry over 9 months height and space requested

Fortis BC, CIPH-BC, Pembina, Unaffiliated Builders
Responding to COVID-19

City providing support on training development

Industry seeking additional implementation time

Timeline response 2022
Training

**Designer**
Industry is developing system design training with CIPH-BC and TECA

**Trades**
Industry is developing trades training for trades currently installing gas systems

**Coordinated**
Training development is involving groups working throughout BC
Engagement + Feedback

JUN 2019-FEB 2020
Collaborative Changes

Education For Industry

JANUARY 2021
First Course Delivered

Effective Date

JANUARY 2022
By-Law Effective Date
Outcomes
Outcomes

Significant
A carbon pollution reduction of 63% compared to 2019 and 86% compared to our 2007 baseline

Aligned
Aligning with the BC Step code and Energy Star (national) opens business opportunities

Responsible
A responsible transition developed with our local industry and improved home resilience
Thank You