

An aerial photograph of Vancouver, British Columbia, Canada, taken during the "golden hour" of sunset. The city's dense urban core, characterized by numerous high-rise apartment buildings and skyscrapers, is visible in the center and right. The city is situated on a peninsula and is surrounded by the water of the Burrard Inlet. In the foreground, there are green spaces, including a golf course, and residential areas with trees showing autumn foliage. The background features the rugged, snow-capped mountains of the Pacific Coast Range under a sky with soft, warm colors of orange, pink, and purple.

Bringing Passive House to Scale in Vancouver

South Pacific Passive House 19

Chris Higgins

City of Vancouver
Green Building Planner





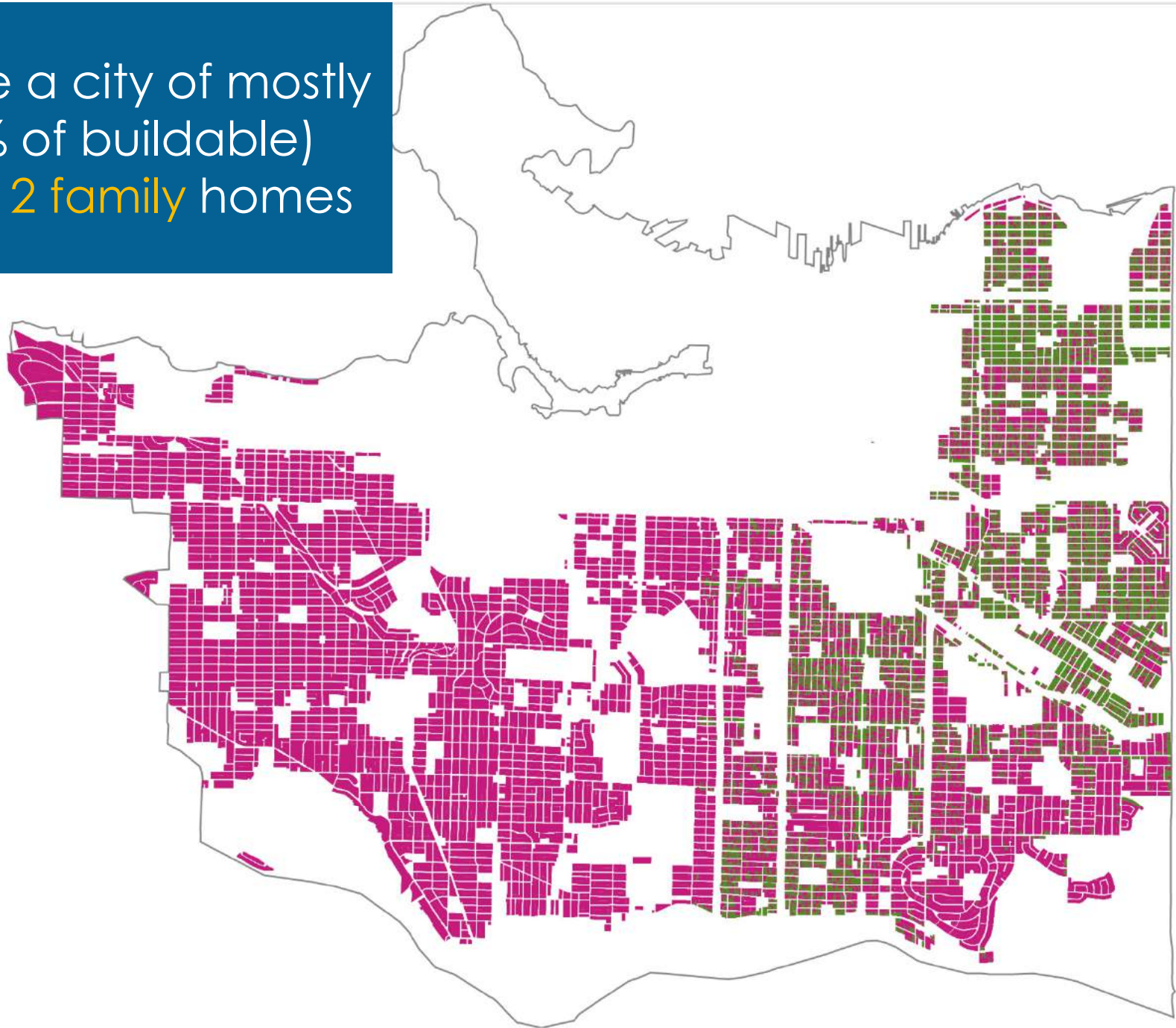
The image is a map of the Vancouver Metropolitan Region and the City of Vancouver. The map is rendered in shades of blue and white. A white outline delineates the Metropolitan Region, which covers a large area including the city of Vancouver and its surrounding municipalities. A smaller white outline delineates the City of Vancouver. The map shows major roads, water bodies, and geographical features. Text overlays provide population and area statistics for both the Metropolitan Region and the City of Vancouver.

METROPOLITAN REGION:
Population 2,500,000
Area 2,877 km²

CITY OF VANCOUVER:
Population 603,500
Area 115 km²

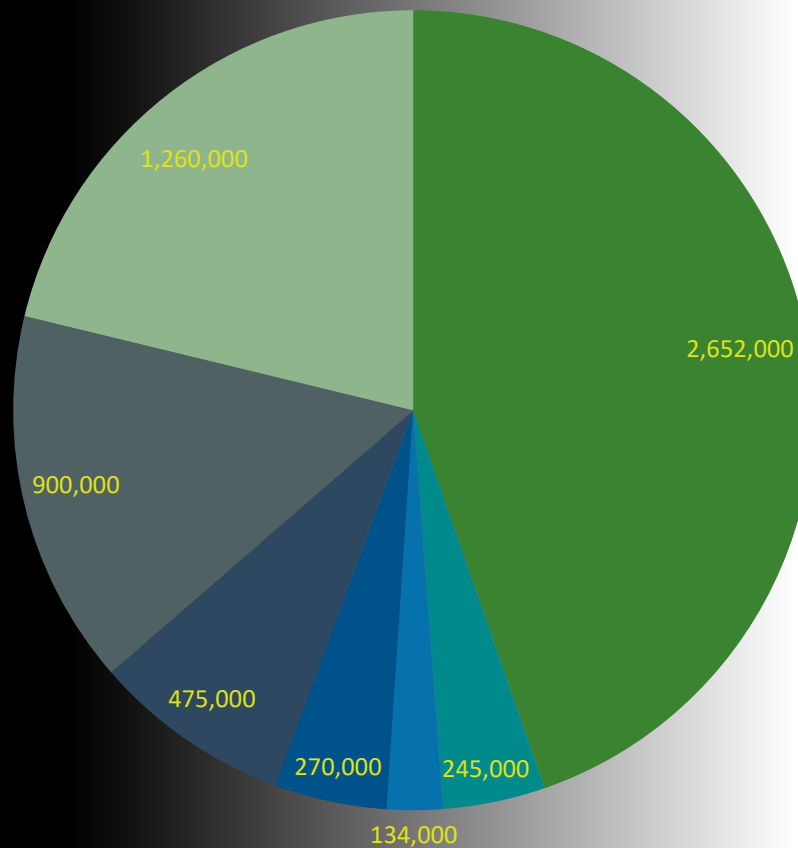
CANADA/US BORDER

We are a city of mostly
(78% of buildable)
1 and 2 family homes



What Vancouver builds annually

New Home Total Square Footage



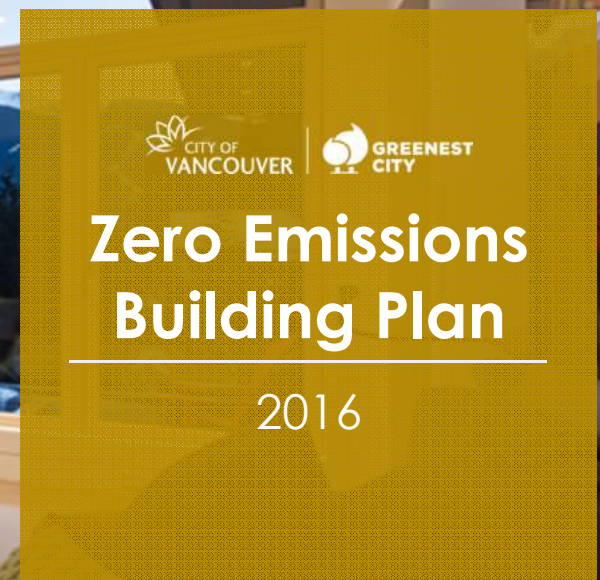
- Single Family
- Laneway
- Duplex
- Rowhouse
- Low Rise (mixed use)
- High Rise (mixed use)
- High Rise Apartment





Looking towards downtown
mostly we see 1 & 2 family
housing

COUNCIL SUPPORT FOR GREEN BUILDINGS



Nearly all new buildings required to emit **zero emissions** in their operation by 2025.
Existing buildings have the same goal by 2050.

1

REDUCE
ENERGY USE

2

INCREASE **USE**
OF
RENEWABLE
ENERGY

3

INCREASE
SUPPLY OF
RENEWABLE
ENERGY

A strategic approach to Zero Emissions new buildings

WHERE WERE WE, WHERE ARE WE?





HOW MANY NEW PH HOMES?

Passive House
Homes

1

2014

2,590

2018 built or permitted

HOW IS THE GREEN ECONOMY GROWING?

Building Industry

0 PH window manufacturers

5 PH window manufacturers

THREE MACRO STEPS



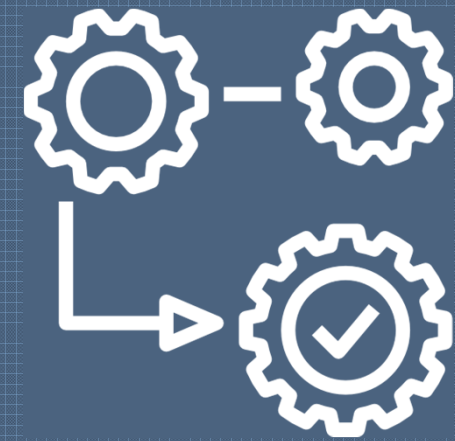
1

SET A CLEAR AND
COMPELLING
DESTINATION
AND PATH



2

FIND, FEED
AND FOLLOW
THE LEADERS



3

BUILD INDUSTRY,
GOVERNMENT
CAPACITY



WHY POINT TO PASSIVE HOUSE?

Excellence in envelope
and ventilation

Research and
quality control

Envelope and ventilation
are (almost) forever

Resonance with designers,
builders, and public

Training and network
of practitioners

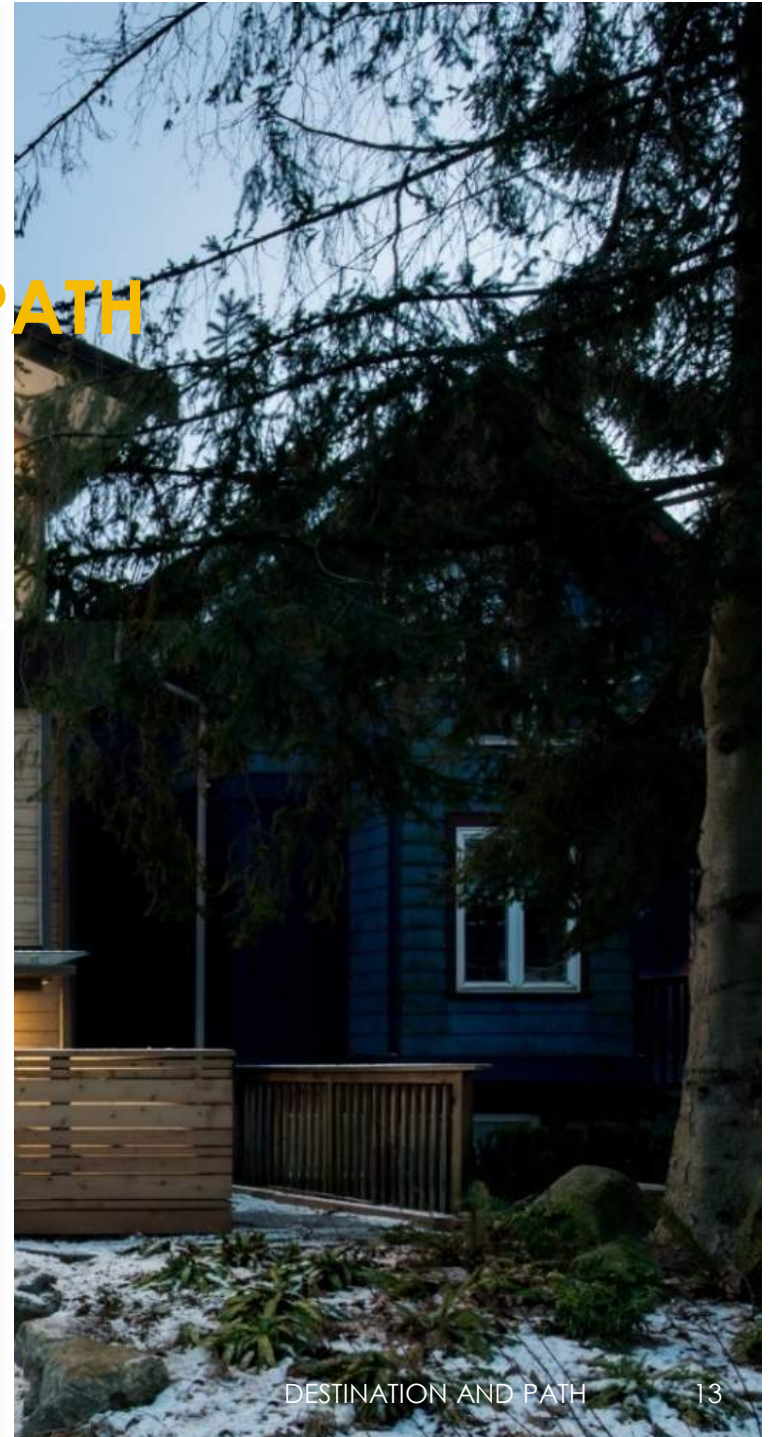


SET A CLEAR AND COMPELLING DESTINATION AND PATH

Step down GHG and heat-loss limits in building code

Envelope and ventilation systems first

Point to Passive House





COMMUNICATE WITH INDUSTRY

Staff speak at **local
fenestration conferences**

City sets **100% Renewable by
2050** goal and communicates
widely

Meet **industry leaders** often to
get input and direction

Provide **Certified Passive Trades
Education** through local trade
school



THREE MACRO STEPS



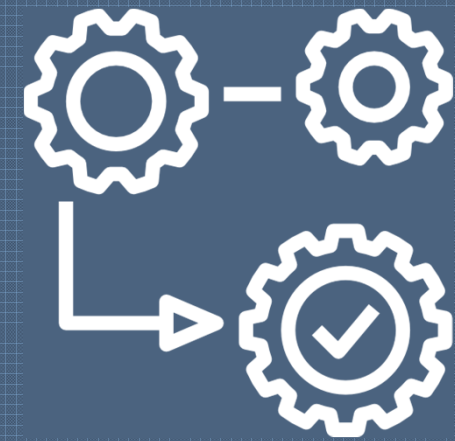
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FIND

Meaningful,
personal
collaboration
with
developers
and builders

Leaders have
passion; they share
willingly

Professionals want
to design and
build quality





FEED

Remove Barriers: first we started just removing items

Provide Incentive: incentives were eventually offered

Only once barriers were removed was there political appetite to consider incentives

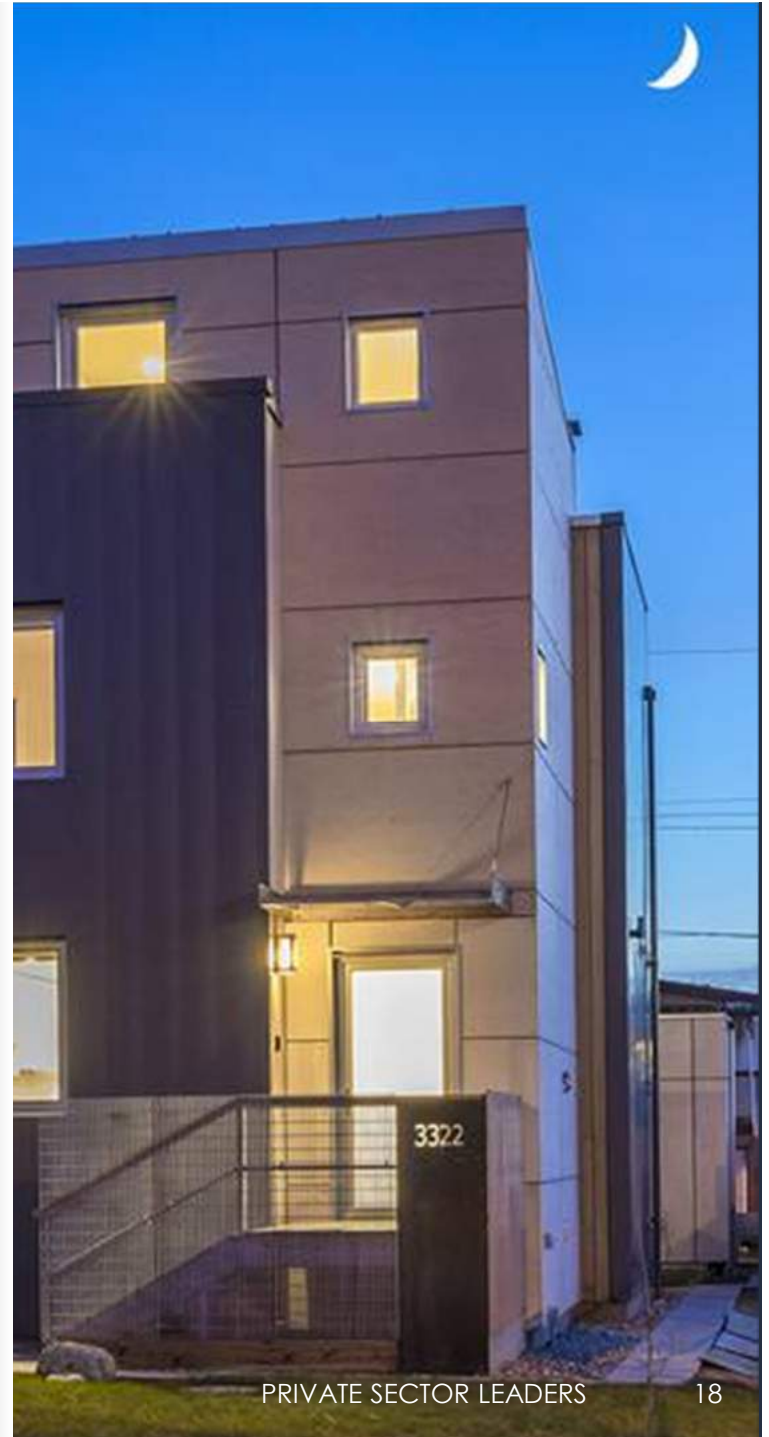


FEED

Nearzero.ca
\$20,000 for detached
Passive House case study

5% extra floor area for
Passive House multi-
dwelling development

Help when needed:
A staff that helps every
PH through the process





FEED

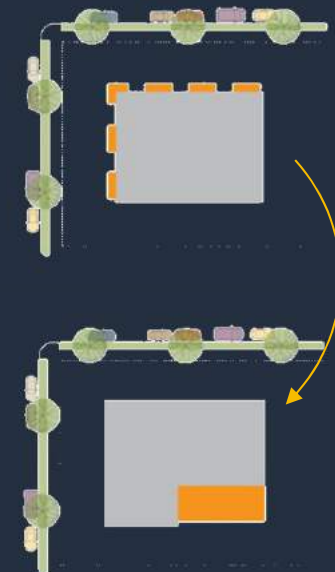
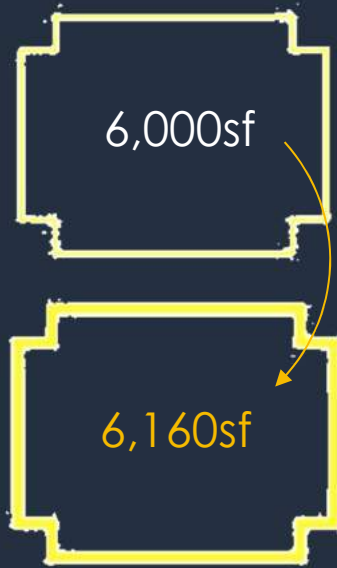
LEED Green Building for Buildings Operations Manual		Construction and Major Renovations		Progression	
Section 4.1: Sustainable Sites		Section 4.2: Water Efficiency		Section 4.3: Energy and Atmosphere	
Section 4.1.1: Sustainable Sites - Location		Section 4.2.1: Water Efficiency - Water Use Reduction		Section 4.3.1: Energy and Atmosphere - Energy Performance	
Section 4.1.1.1: Sustainable Sites - Location - Prohibit Hazardous Materials		Section 4.2.1.1: Water Efficiency - Water Use Reduction - Water Use Reduction		Section 4.3.1.1: Energy and Atmosphere - Energy Performance - Energy Performance	
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Simplify regulations

Publish acceptable alternate approaches for PH

Relax: floor space, height & setback limits

Provide Flexibility: frontage, shape & balcony requirements



THREE MACRO STEPS



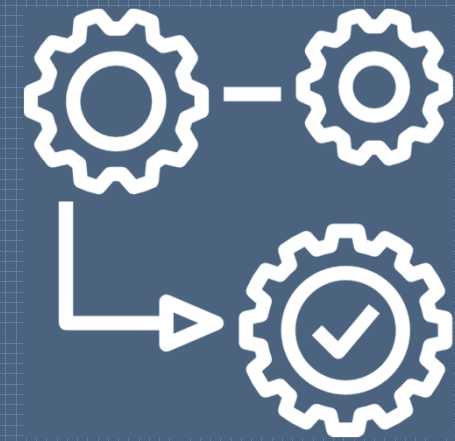
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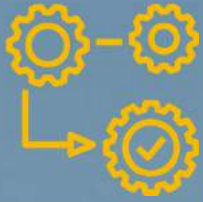
BUILD INDUSTRY,
GOVERNMENT
CAPACITY



Informal Presentations

10-15
informal short
presentations on
PH

*This helps build interest
in education*



BUILD INDUSTRY AND GOVERNMENT CAPACITY

Trained over 100
city staff on PH 1
day

Assign PH Trades
trained inspectors



Support staff in
getting CPHC/D

New City Facilities
built to PH

Aim for every staff
on a PH project is
PH trained



- We made PH the first path for projects rezoning.
- Staff estimate 20% of new rezoned projects are pursuing PH.
- Moves PH closer to the mainstream

Examples

SHOULD I BE WORRIED?

SIX STOREY RENTAL

First multi family 3+
dwelling building

SIX STOREY RENTAL

Missed PH Cert
127 kWh/m²
0.72 ACH50
Still a great all electric
building



FIRST SINGLE FAMILY

First Certified Passive House in Vancouver

FIRST DEVELOPER DOING A SECOND PASSIVE HOUSE MULTI



Rental Multi Family

PH SINGLE FAMILY





Two PH towers 43
and 48 storeys



NEW ART GALLERY

At the fundraising
stage

Announced
PH in January



WHAT IS NEXT

- Consider **Passive House** within base zoning
- Consider how to encourage **retrofit with PH**
- Consider **embodied** energy in policy
- **Share** what we have learned with others. We fail if we are the only City with broad use of PH



Contact Us we love to share

- Education: Andrea.Wickham@Vancouver.ca
- Zoning Bonus Density: Sabina.Foofat@vancouver.ca
- Floor Space Exclusion: Sailen.Black@Vancouver.ca
- Anything else: Chris.Higgins@Vancouver.ca
- On Twitter: @CAHiggins

Thank You

