

Fall 2023 CP Update Seminar

Updates from Sustainability Branch

- Energy compliance paths – flow chart
- Airtightness testing requirements for 10.2.1.3 buildings –
 - Charling Li, Green Building Engineer
- Embodied Carbon Requirements
 - Zahra Teshnizi, Senior Planner - Embodied Carbon

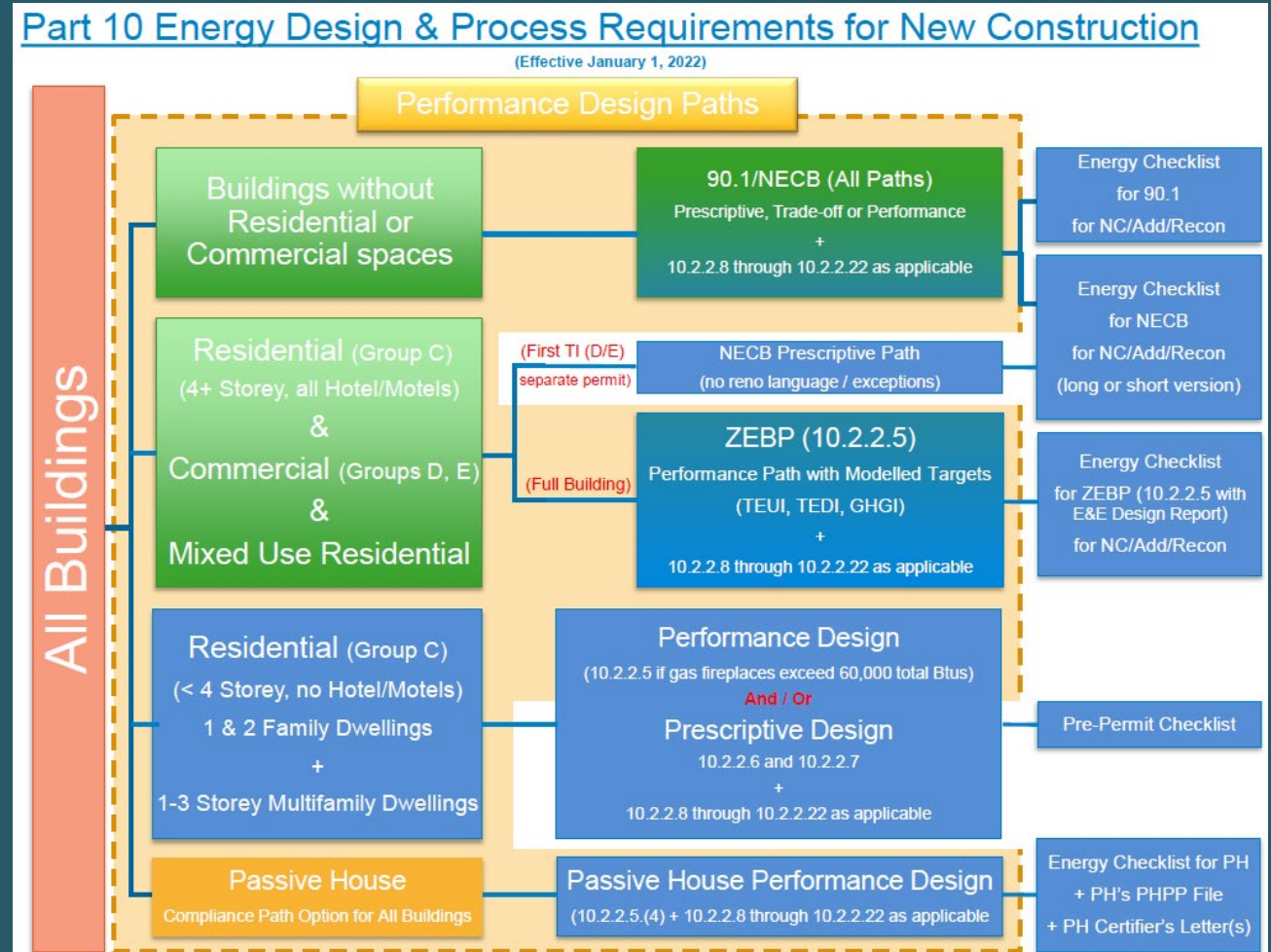
Part 10 Flowchart - checklists

Part 10 Flowchart
(effective Jan 1, 2022)

<https://vancouver.ca/files/cov/part-10-energy-requirements-flowchart-for-nc-effective-jan-1-2021.pdf>

Checklists are available here:

<https://vancouver.ca/home-property-development/large-building-energy-requirements-forms-checklists.aspx#pd53122>



10.2.1.3. Buildings

Airtightness testing requirements

- For 10.2.1.3 buildings “Residential Buildings of 4 Storeys or More, and Commercial Buildings (Including Hotels and Motels)”
 - Airtightness testing 10.2.2.21 applies
 - Whole building airtightness testing is required
 - Suite testing is required for suites in multi-family buildings
 - Mixed used buildings with Groups A/B/F + Groups C/D/E also require airtightness testing
- Maximum air leakage rates per Table 10.2.2.21
- Requirement effective May 15, 2018 (VBBL 2014)
 - BP and OC submittal requirements for VBBL 2019 projects


Table 10.2.2.21.
Maximum Tested Air Leakage Rates
Forming part of Sentence 10.2.2.21.(2)

Building Classification	Maximum Tested Air Leakage Rate
<i>Buildings, excluding buildings containing not more than two principle dwelling units and ground-oriented dwelling units</i>	2.0 L/s/m ² at 75 pascals
Ground-oriented <i>dwelling units</i>	2.5 air changes per hour at 50 pascals
Ground-oriented <i>dwelling units</i> alternative measure	Normalized leakage area of 1.7 cm ² /m ² at 10 Pa
<i>Suites in multi-family buildings</i>	1.23 L/s/m ² at 50 pascals

10.2.1.3. Buildings

Airtightness testing requirements

- NEW! External technical guidance document Bulletin 2023-004-AD/BU released in Sept 2023
- <https://vancouver.ca/files/cov/cbo-bulletin-2023-004-ad-bu-airtightness-testing-2023-sept-12.pdf>
- Clarifies metrics, testing, and reporting requirements
- Acceptable approaches if not meeting max tested air leakage rates
- Guidance on alternative test methods



DEVELOPMENT, BUILDINGS AND LICENSING
Chief Building Official (CBO) and Building Code and Policy
Building Policy Branch

BULLETIN 2023-004-AD/BU September 12, 2023


Airtightness Testing – Process and Requirements for New Buildings

This Bulletin introduces the new "Guideline – Airtightness Testing – Process and Requirements for New Buildings". The *Guideline* advises designers, builders, and airtightness testing agents with respect to acceptable whole building and individual suite airtightness testing methods per the requirements of the Vancouver Building By-law.

An effective date (January 1, 2024) for the submittal of airtightness documentation at the Building Permit stage is included below.

Background

Article 10.2.2.21. of the Vancouver Building By-law (the *VBL*) requires airtightness testing for new buildings or individual suites. Depending on the building type, size or configuration, different metrics or testing and reporting requirements are applicable. For example, smaller buildings (residential) eligible for an EnerGuide rating have a different set of applicable airtightness testing requirements than larger buildings (e.g. >3 storey residential, commercial or office occupancies), as do buildings seeking Passive House certification. Clarification for each building type is provided in the new *Airtightness Testing – Process and Requirements for New Buildings' (the Guideline)*.



City of Vancouver Chief Building Official (CBO) and Building Code Policy
Development, Building and Licensing – Building Policy Branch
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Guideline

Airtightness Testing - Process and Requirements for New Buildings

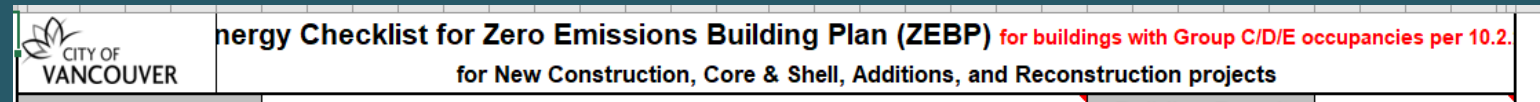
Effective September 12, 2023

Authority: Chief Building Official

10.2.1.3. Buildings

Airtightness testing submittals at BP

- ZEBP Energy Checklist page 1
- <https://vancouver.ca/files/cov/Energy-Checklist-for-ZEBP-for-NC-Add-and-Recon.xlsx>
 - NEW! responsible party 'airtightness testing'
 - Indicate which professional is taking this role



Scope Applicability & Responsible Party Is there a CP on this project?

For the following:

- 1) List the responsible party for each area, by company name and name of responsible party.
- 2) If an area is not applicable, indicate N/A and have the responsible party provide a letter of explanation. (Letter of Explanation not required for Power, Other Equipment, or Modellings)

Examples:	<input checked="" type="checkbox"/>	Building Envelope	Company Name, Designer Name	Letter of Explanation	N/A
	<input type="checkbox"/>	HVAC	Company Name, Designer Name	Letter of Explanation	Yes
<input type="checkbox"/>		Building Envelope		Letter of Explanation	
<input type="checkbox"/>		Airtightness Testing		Letter of Explanation	
<input type="checkbox"/>		HVAC		Letter of Explanation	
<input type="checkbox"/>		Service Water Heating		Letter of Explanation	
<input type="checkbox"/>		Power		Letter of Explanation	N/A
<input type="checkbox"/>		Lighting		Letter of Explanation	
<input type="checkbox"/>		Other Equipment		Letter of Explanation	N/A
<input type="checkbox"/>		Building Modelling (per CoV Mod Guidelines)		Total Number of Letters	

vancouver.ca/home-property-development/large-building-energy-requirements-forms-checklists.aspx DOC/2012/155502 Version: 230519-1

10.2.1.3. Buildings

Airtightness testing submittals

- ZEBP Energy Checklist page 2
 - identifies submittals required at Building Permit and Occupancy Permit
 - corresponds with Bulletin 2023-004-AD/BU & Airtightness Guidelines

BP

OC

CITY OF VANCOUVER		Energy Checklist for Zero Emissions Building Plan (ZEBP) for buildings with Group C/D/E occupancies per 10.2 for New Construction, Core & Shell, Additions, and Reconstruction projects	
Address :		Building Permit Application No.:	
BUILDING PERMIT STAGE			
Zero Emissions Building Plan Performance Path - Deliverables (Required):			
IMPORTANT: Under the ZEBP path, the proposed building's performance model must incorporate all applicable requirements under article 10.2.1.3 or 10.2.1.5 of the Building Bylaw, and, in accordance with the CoV Energy Modelling Guidelines, meet or exceed the applicable performance targets under article 10.2.2.5. Although the proposed building is demonstrating compliance using a performance path, applicants are to also submit completed forms to demonstrate the performance of all energy related building components. These forms are provided in the tabs below.			
Building Envelope Info		<input type="checkbox"/> Building Envelope Assemblies Performance (tab below)	
<input type="checkbox"/> Energy Statements on Drawings		<input type="checkbox"/> Airtightness testing plan	
Airtightness:		<input type="checkbox"/> Modeled w reduced infiltration? <input type="checkbox"/> N/A	
Testing method: <input type="text"/>			
Lighting Info		<input type="checkbox"/> Lighting Systems and Controls Performance (tab below)	
<input type="checkbox"/> Energy Statements on Drawings			
HVAC Info		<input type="checkbox"/> HVAC Systems and Performance (tab below)	
<input type="checkbox"/> Energy Statements on Drawings		Sources used for mechanical systems design (Actual, Standards/Tables, Other);	
		Ventilation: <input type="text"/>	
		Occupancy Densities: <input type="text"/>	
		Schedule of Operation: <input type="text"/>	
Service Water Heating Info		<input type="checkbox"/> Service Water Heating Systems and Performance (tab below)	
<input type="checkbox"/> Energy Statements on Drawings			
Performance Modelling Info		<input type="checkbox"/> Energy & Emissions Design Report (CoV Energy Modelling Guidelines)	
<input type="checkbox"/> Energy Statements on Drawings		<input type="checkbox"/> LEED Letter Template (FAc1)	
OCCUPANCY PERMIT STAGE			
Airtightness Testing Info		<input type="checkbox"/> Updated Energy & Emissions Design Report (with tested airtightness results)	
		<input type="checkbox"/> Airtightness Testing Results (tab below)	
Building contains resid. suites? <input type="checkbox"/>		<input type="checkbox"/> Whole-building Airtightness Testing Report	
Energy Docs Info			
(excluding airtightness testing)			

10.2.1.3. Buildings

Airtightness testing submittals at BP

- ZEBP Energy Checklist page 2
 - NEW! checklist identifies submittals required at BP

Building Envelope [Info](#)

[Energy Statements on Drawings](#) Building Envelope Assemblies Performance (tab below)

Airtightness:

Testing method: Airtightness testing plan (submission not required) ▼

Modeled w reduced infiltration? N/A

- Two options based on **testing method** chosen by applicant
- Direction to applicant is built into the checklist
 - Single zone – “Airtightness testing plan (submission not required)”
 - Alternate testing methods – submit airtightness plan

10.2.1.3. Buildings

Airtightness testing submittals at BP

- ZEBP Energy Checklist page 2
 - NEW! checklist identifies submittal required at BP

Building Envelope [Info](#)

[Energy Statements on Drawings](#) Building Envelope Assemblies Performance (tab below)

Airtightness:

Testing method: Airtightness testing plan (submission not required) [▼]

Modeled w reduced infiltration? Submit detailed confirmation letter from building envelope consultant

- Two options based on whether project **modelled with reduced infiltration**
- Direction to applicant is built into the checklist
 - Yes - “Submit detailed confirmation letter from building envelope consultant”
 - No – “N/A” no submission required

10.2.1.3. Buildings

Airtightness testing submittals at OC

OCCUPANCY PERMIT STAGE

<input checked="" type="checkbox"/> Airtightness Testing	<input checked="" type="checkbox"/>	Updated Energy & Emissions Design Report (with tested airtightness result)
	<input checked="" type="checkbox"/>	Airtightness Testing Results (tab below)
Building contains resid. suites? <input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/>	Whole-building and Suite Airtightness Testing Report

All 10.2.1.3 projects must submit at OC:

- Updated Energy & Emissions Design Report with tested airtightness value
- NEW! Tab in Energy Checklist: “Airtightness Testing Results”
- Airtightness testing report
 - With suite airtightness testing section (if multi-family)
 - With lessons learned section (if failing to meet max. air leakage rate)

10.2.1.3. Buildings

Airtightness testing submittals at OC

- NEW! Airtightness Compliance Results tab in ZEPB Energy Checklist
 - Identifies project compliance or non-compliance
 - Identifies submittal requirements if non-compliant

CITY OF VANCOUVER			
Airtightness Compliance Results (for ZEBP projects)			
Address:		Building Permit Application #:	
Testing Agency:	Email:	Telephone:	
Contact Person:	Email:	Telephone:	
Project Compliance			
Complete this form at Occupancy Permit Stage			
Whole Building Air Leakage Test Target (L/s/m ² at 75 Pa):	1.1	Whole Building Air Leakage Test Result (L/s/m ² at 75 Pa):	2.12
Is the test result below the maximum tested air leakage rate in VBBL?	No	<i>Include lessons learned section in airtightness testing report</i>	
Did the project model use reduced infiltration rates?	Yes		
If yes, is the whole building test result below the test target with reduced infiltration?	No	<i>Include lessons learned section in airtightness testing report</i>	
Does the project contain residential suites?	Yes	<i>Provide suite airtightness testing report</i>	
If yes, are the suite testing results below the maximum suite air leakage rate in VBBL?	No	<i>Include lessons learned section in airtightness testing report</i>	
Building Test Boundary Information			
Description of building air barrier system:	Wall: Exterior Vapour Permeable Peel and Stick and Interior Caulked Poly Roof: Self-Adhered Membrane Floor: Cast-in-Place Concrete Slab		
Test Method:	Airtightness testing using pressurization and depressurization following ASTM E-779 standard as a guide.		
Building Floor Area (m ²):	8,115	Test boundary enclosed surface area (m ²):	28,785
Description of test boundary:	Interior drywall finishes and exterior cladding finishes were installed. All exterior windows and doors were installed. Roofing membrane was installed.		
Condition of intentional openings:	All intentional openings (air intake or exhaust penetrations, dryer, kitchen and bathroom exhausts vents) in the building were sealed during the airtightness test. Exhaust fans at the roof were turned off and temporarily sealed for the test.		

10.2.1.3. Buildings

Airtightness testing submittals at OC

- Non-compliance to airtightness targets are allowed
 - Submit 'lessons learned' report
- E&E Design Report at OC may show non-compliance – this is allowed
- In future, non-compliance may be handled differently but notice will be provided

CITY OF VANCOUVER	Airtightness Compliance Results (for ZEBP projects)		
Address:			Building Permit Application #:
Testing Agency:	Email:	Telephone:	
Contact Person:	Email:	Telephone:	
Project Compliance			
Complete this form at Occupancy Permit Stage			
Whole Building Air Leakage Test Target (L/s/m ² at 75 Pa):	1.1	Whole Building Air Leakage Test Result (L/s/m ² at 75 Pa):	2.12
Is the test result below the maximum tested air leakage rate in VBBL?	No	<i>Include lessons learned section in airtightness testing report</i>	
Did the project model use reduced infiltration rates?	Yes		
If yes, is the whole building test result below the test target with reduced infiltration?	No	<i>Include lessons learned section in airtightness testing report</i>	
Does the project contain residential suites?	Yes	<i>Provide suite airtightness testing report</i>	
If yes, are the suite testing results below the maximum suite air leakage rate in VBBL?	No	<i>Include lessons learned section in airtightness testing report</i>	

10.2.1.3. Buildings

Airtightness testing - Summary

Building Permit

- Airtightness testing plan (if using alternative testing method (not single-zone))
- Reduced infiltration letter (if energy modelling with reduced infiltration)

Occupancy Permit

- Airtightness testing report
 - With suite airtightness report (if multi-family)
 - With lessons learned report (if failing to meet air leakage maximum)
- Airtightness Testing Results tab in Energy Checklist
- Energy & Emissions Design Report

Questions

