

NAPHN15 - October 1, 2015

Removing regulatory barriers

Breakout for policy makers #1

Tom-Pierre Frappé-Sénéclauze
Pembina Institute

Leading Canada's transition to clean energy

The Pembina Institute is a non-partisan think tank that seeks policy change to transition Canada to clean energy.

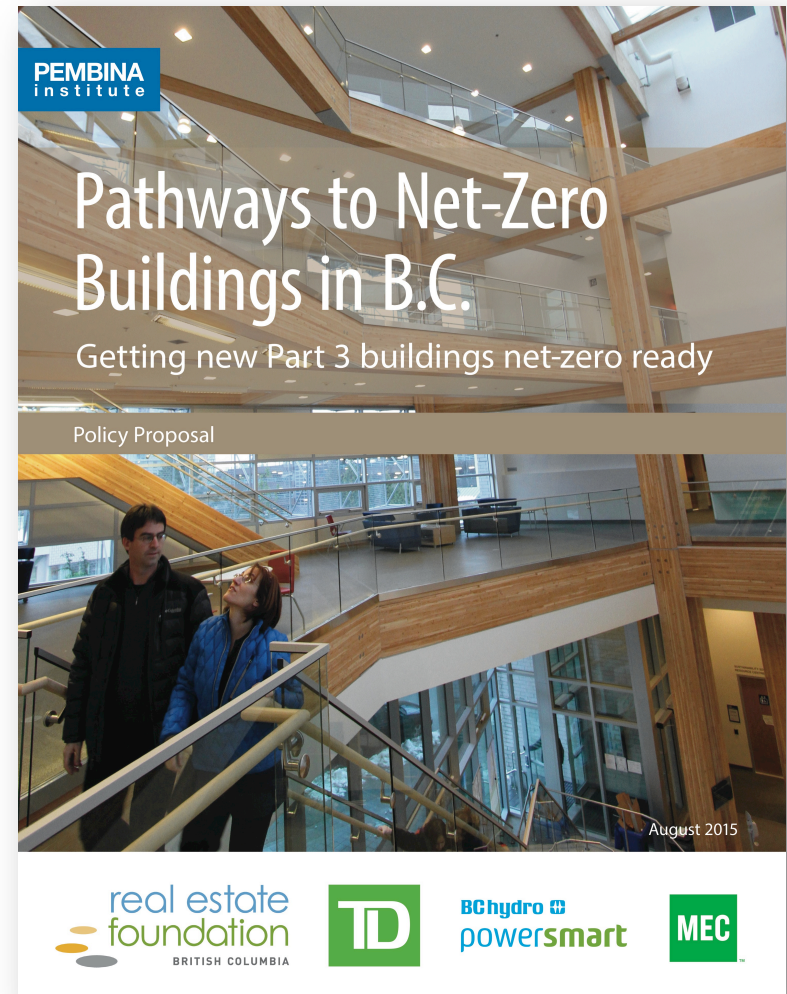


Recent research

Thought Leader Forum:

How fast can we get all new Part 3 buildings to near net zero energy?

- Two days
- 82 participants
- 50 organizations



21 Interviews with practitioners and policy makers

Ken Levenson

Tad Everhart

Dylan Lamarr

Timothy McDonald

David Salamon

Sean Pander

Rob Nicely

Tomàs O'Leary

Katy Hollbacher

Allen Gilliland

Richard C. Yancey

Rob Bernhardt

Rob Hawthorne

Helen Goodland

Rich Chien

Gregory McCall

Katrin Klingenberg

Elizabeth Hanson

John Lee

Brandon Nicholson

Amina Lang

... thank you!

In the pocket in front of you...

1. Summary of NA policies
2. Summary of barriers
3. Pathway to net zero (logic model)



Image: aviationexplorer.com

Pathways to Net-Zero Buildings in B.C.: Getting Part 3 Net-Zero Ready

SHORT-TERM ACTIONS (0-2 yrs)

VISION AND CHANGE MANAGEMENT

- Set targets for existing and new buildings in Climate Leadership Plan
- Create ongoing multi-stakeholder panel to advise on energy efficiency in Part 3 buildings
- Assess gaps in the current change management system

CODE DEVELOPMENT

- Work with Energy Efficiency Working Group to design stretch codes including a net-zero ready stretch target
- Prepare for revised energy code by 2017-18
- Ensure quick assessment of alternative solutions and remove regulatory barriers to high performance buildings

DEMONSTRATION PROJECTS

- Design an 'exemplary buildings' incentive program for net-zero ready demonstration projects
- Require all new provincial buildings and affordable housing to be built net-zero ready
- Support local governments in adopting net-zero ready policies for civic buildings

TRAINING AND CAPACITY BUILDING

- Provide R&D funding for B.C.-made high performance components and to cover certification costs
- Create trade alliance to support delivery of high performance demonstration projects
- Support stakeholder groups to share successes and failures

FINANCING MECHANISMS & INCENTIVES

- Gather lessons learned from Manitoba and U.S. PACE programs
- Research how incremental capital cost could be transferred to stratas
- Align utility and provincial incentives
- Increase carbon tax

BENCHMARKING

- Enable electronic data exchange with Portfolio Manager
- Develop and implement mandatory benchmarking and reporting policy
- Develop benchmarking data-sharing agreements between the prov, utilities and LGs
- Develop communication framework for sharing benchmarking results to influence market decisions
- Develop roadmap to public disclosure of benchmarking data
- Assess usefulness of asset-based tools (e.g. DOE asset-score) and pilot if needed

COMPLIANCE, COMMISSIONING, AND CONTINUOUS OPTIMIZATION

- Integrate Building Envelope Thermal Bridging Guide in permitting process
- Develop airtightness testing requirement
- Find appropriate commissioning standard for adoption in stretch code
- Engage owners on value proposition of commissioning and continuous optimization
- Develop performance based contracts spreading responsibility for performance between designer, contractor, and operator
- Promote adoption of APEG/AIBC modelling guidelines
- Promote adoption of design verification checklist and streamlined field review process
- Implement spot checking to ascertain compliance record of builders, engineers, architects and developers

SHORT-TERM OUTCOMES (0-3 yrs)

B.C. commits to an energy code schedule and supporting policies achieving net-zero ready by 2030

Local governments replace technical building bylaws with provincial stretch code

Adopt ASHRAE 90.1-2016 or NECB 2015 (revised) in 2017-2018 code

50-100 demonstration projects planned across the province including schools, homes, MURBs, offices, etc. are planned, built or retrofitted net-zero ready

Research of case studies identify low-cost design strategies that achieve high performance and comfort

Increased capacity to deliver on high performance buildings

Allow redistribution of incremental capital cost to facilitate investment in EE

New benchmarking policy implemented in major urban centers

Reporting and disclosure of benchmarking data informs policy and market

Adopt mandatory commissioning standard

Increased use of integrated project delivery frameworks

Increased opportunities for continuous optimization of new and existing buildings

Improve compliance from ~70% to ~85%

MID-TERM OUTCOMES (3-10 years)

Increased market demand for energy efficient buildings and products

Local manufacturer, distributors and suppliers offer a range of high performance components

Cost, energy use, and design solution data available for design of high performance energy codes

Trades and professionals familiar with high performance design

Performance gap closed through outcome-based code or market transformation

Building performance is maintained and matches design expectations

Energy code compliance > 85%

LONG-TERM OUTCOMES (10-15 years)

New Part 3 buildings net-zero ready in design and operation

B.C. produces and exports high performance building designs and components

END GOALS

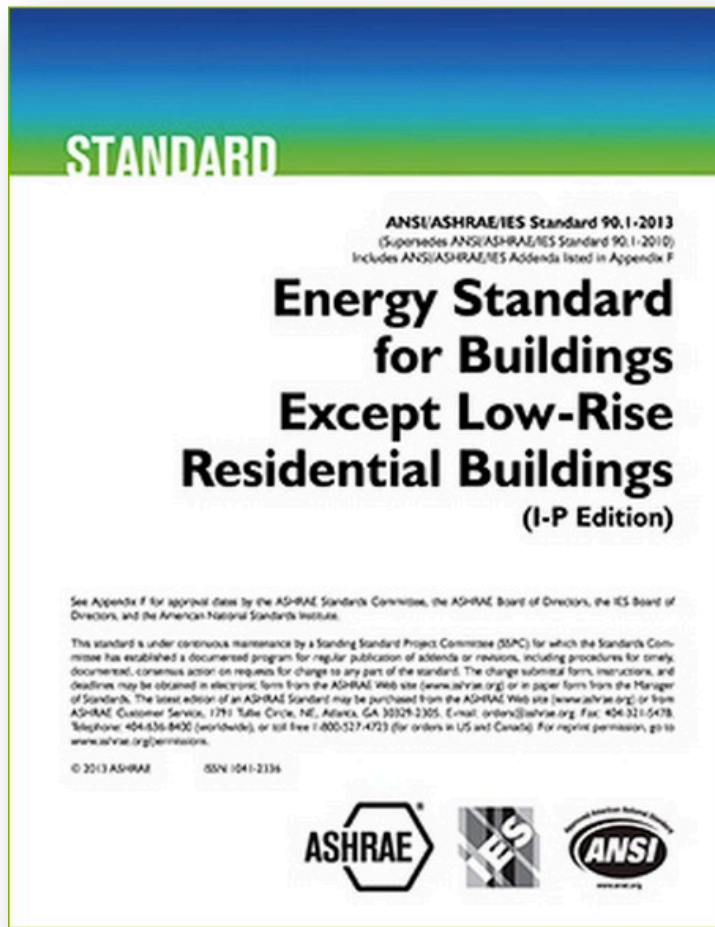
Energy efficient low carbon building stock
Green jobs
Competitive economy

<http://www.pembina.org/pub/pathways-to-net-zero-bc-policy-2015>

Misalignment with energy codes

- Energy COST budget
- Designed for climates with cooling loads
- No metrics for envelope performance

Electrical over thermal
Equipment over envelope

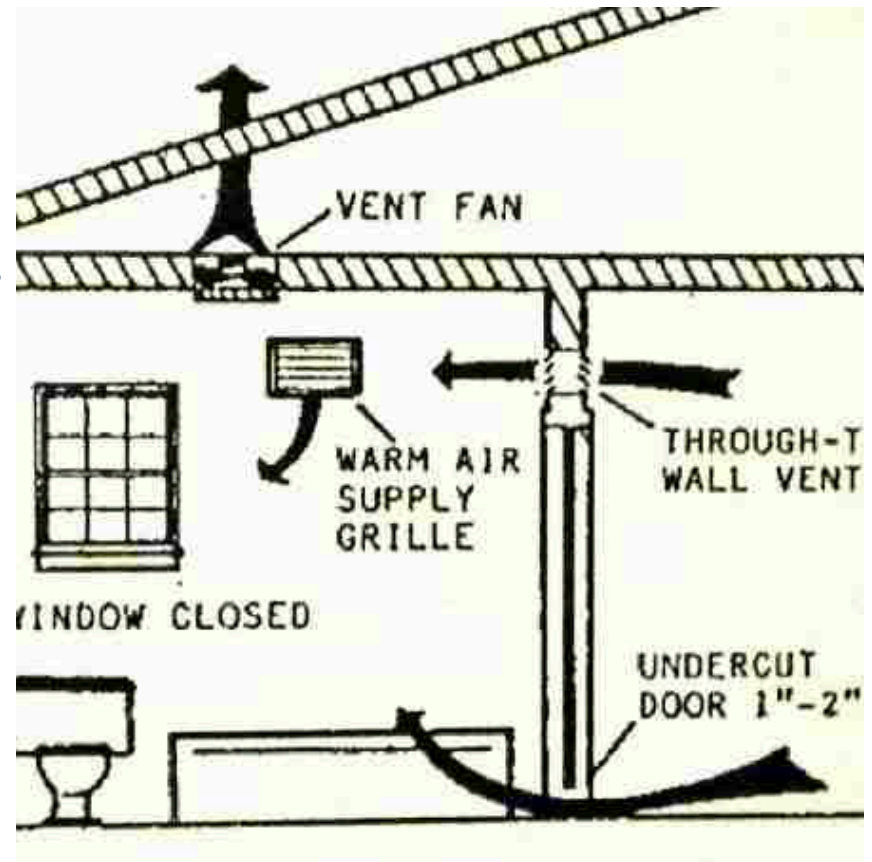


Specific code issues: ventilation

- No recirculating hoods
- No mixing of bathroom/kitchen exhaust
- Venting of vertical shafts / elevators
- Outdoor air inlet in windows
- Distance of intake, exhaust, and windows

Continuous HRV in airtight envelope
vs

Intermittent kitchen/bathroom exhaust
in permeable envelope




→ Case by case variances

Specific code issues: components

Windows & HRV

- Lack of diversity and competition in local supply: not tested to PH standards
- Imported ones lack certifications



		Canada • Zone 1 2 3 energystar.gc.ca ER/RE 31	
DO NOT REMOVE UNTIL FINAL INSPECTION/NE PAS RETIRER AVANT L'INSPECTION FINALE			
 National Fenestration Rating Council® CERTIFIED		Window Company Ltd. Operable Casement Wood frame, Triple glaze, Low-e coating (e=0.022, S3, S5), Krypton/air filled (both cavities) Grills<=13mm XYZ-X-1-00001-00001	
ENERGY PERFORMANCE RATINGS			
U-Factor 0.21 (U.S./I-P)		Solar Heat Gain Coefficient 1.19 (Metric/SI)	
ADDITIONAL PERFORMANCE RATINGS			
Visible Transmittance 0.49		Air Leakage ≤0.3 (U.S./I-P)	
		≤1.5 (Metric/SI)	
Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information.			
www.nfrc.org			

Specific code issues: components

Windows & HRV

- Lack of diversity and competition in local supply: not tested to PH standards
- Imported ones lack certifications



Specific code issues: fire safety

- Plastic flex-duct
- Structural wood frame construction



Photo: W.G. Clark Construction

Issues with land use policies

- FSR, set backs, etc. :
thicker walls lead to loss of useable area
 - Thick wall exclusions;
set back relaxation
(Vancouver, Seattle)
 - Use inside area for FSR
 - Use foundation line for
set backs
(Victoria)
 - Include PH as alternate
(Vancouver)
- Rezoning policies
based on LEED
- District energy
connectivity reqs

Issues with administrative processes

- Permit reviewers & inspectors unfamiliar with PH
 - Training (Vancouver)
 - Specialized application process (Vancouver)
 - Fast track (San Francisco)
- Modeling tools not designed for high performance
- Push back from design panel

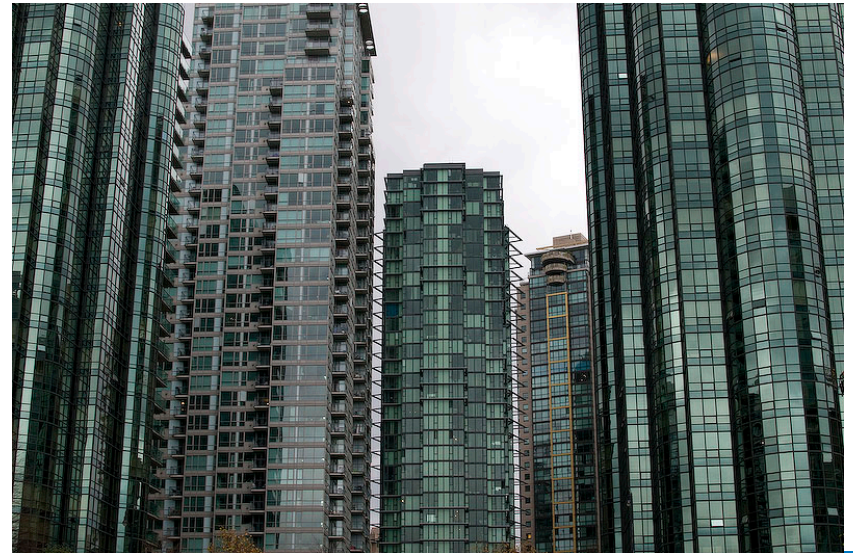


Photo: Tim Van Horn

Policies supporting better envelopes

- Air-tightness target & testing
 - All buildings (Washington state, Seattle)
 - One and two family dwellings (Vancouver)
- Integration of Thermal Bridging Guide (Vancouver)
- Benchmarking & disclosure (New York, Seattle)



Photo: airbarriertesting.blogspot.ca

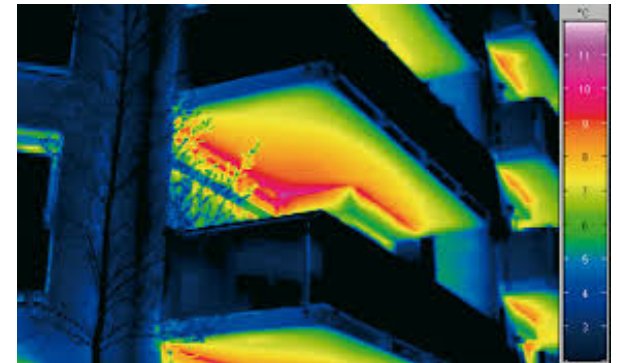


Photo: Arch. Design & Innovation

Solutions

- Thick wall exclusions / set back relaxation
 - Equivalencies for imported components
 - Bundle of PH variances?
 - Catalog of approved details?
-
- Air-barrier testing (+air-tightness target?)
 - Thermal bridging calculations
 - Annual benchmarking
- ... Others?**

Panelists

Sean Pander,

Green Building Manager, City of Vancouver

Richard Yancey,

Executive Director, Building Energy Exchange (NYC)

Grégoire Clerfayt,

Manager Energy and Buildings, Institut Bruxellois pour la
Gestion de l'Environnement (Brussels)

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