

Meeting Notes

Building Research Council (BRC)

Wednesday April 20, 2022, 9:00 a.m. to 12:00 p.m.

Online Meeting

In Attendance:

Denisa Ionescu, BC Housing Chair
Afshin Gharib Mombeni, BCIT
Albert Lam, Brantwood Consulting
Alexander McGowan, WSP Canada Inc.
Allison DenToom, Engineers and Geoscientists BC
Antje Wahl, Forestry Innovation Investment
Bo Li, BCIT
Bob Sloat, Surety Association of Canada
Cara Lozinsky, University of Toronto
Chris Kirney, NRCan
Cindy Moran, BC Housing
David Bruce
Don Munich, Travelers Canada
Einar Halbig, E3 Eco Group Inc
Fitsum Tariku, BCIT
Fred Tai, Simpson Strong-Tie Canada, Limited

James Salazar, Athena Sustainable Materials
Jean-François Côté, SOPREMA
Jeremy Caradonna, BSSB
Jieying Wang, FPInnovations
Linden Holmen
Lisa Tobber, UBC
Michael Lemm, Busque Engineering
Neal Holcroft, FPInnovations
Nina Dmytrenko, CMHC
Patrick Roppel, EVOKE Buildings Engineering
Patrick Shek, City of Burnaby
Pierre-Michel Busque, Busque Engineering
Remi Charron, BC Housing
Richard Kadulski, Richard Kadulski Architect
Shakir Rashid, SR Engineering
Scott Williams, Building and Safety Standards Branch
Warren Knowles, RDH Building Science

1. Approval of Agenda/Additional Items

The meeting was called to order at 9.00 a.m. D. Ionescu welcomed everyone to the meeting on behalf of the BRC followed by a roundtable introduction. The meeting agenda was approved.

2. Approval of November 17, 2021, Meeting Minutes

The minutes from the November 17, 2021, BRC meeting were approved.

3. The Evolution of ThermalEnvelope.ca, Patrick Roppel, Evoke Buildings

With over 10 year in the making starting with an ASHRAE paper, the BETB Guide and now in a web platform, Patrick presented the latest of this longstanding project. The website includes an expanded database and new functionality to assist users. New features coming soon were presented included a new protocol to accept details from external sources and optimization capabilities.

4. Ongoing Research and Software Development, James Salazar, Athena Sustainable Materials Institute

James provided an update on the various new initiatives that Athena has been working on in the last few years, including Impact Estimator software updates, new LCA guidelines and benchmarking, the development of building pathfinder version that looks as embodied carbon, and finally a software to facilitate EPD development for concrete industry. New web-version of the Impact Estimator for Buildings will be coming out this summer with new functionality.

5. Building Energy Consumption in Urban Area with Urban Heat Island Effect in Consideration, Afshin Gharib Mombeni and Fitsum Tariku, BCIT Building Science Centre of Excellence

Afshin provided the results of his Master's thesis which examined how best to consider heat island effects in building energy modelling. Generated urban weather file with CFD and artificial neural networks for Vancouver and Montreal. Considering the urban heat island effects on one archetype building lead to more cooling energy consumption (23% in Vancouver example) and less heating energy consumption (29%).

6. Automated Building Energy Simulation and Costing using the Building Technology Assessment Platform, Chris Kirney, NRCan

Chris presented a new NRCan tool, the Building Technology Assessment Platform (BTAP), that can be used to assess the energy and cost impact of meeting different levels of Codes and policies for Part 3 buildings. The current tool is for new buildings, but work underway to be able to assess existing building retrofits. An example from using the tool in Nova Scotia was presented.

7. Testing Airtightness and Watertightness of Prefabricated Wall Panels, Neal Holcroft, FPInnovations

Neal presented an overview of a new test chamber used to test airtightness and watertightness of 8' x 8' prefabricated wall specimens. Three different wall systems were tested, results to come after the report is finalized.

8. Low-energy, Low-GHG, Pathways to Net-Zero, Nina Dmytrenko, CMHC

Initial phase of project developed a simple tool (<https://cmhceenergy.ca/>) to help affordable housing project applicants to estimate required energy efficiency and cost savings required to meet different performance levels. This new phase of the project looked at different packages of measures to achieve 25%, 40%, 55% and 80% energy savings relative to NEBC 2017 using BTAP. Next phase will look at different costing data to try to cost optimize the different packages.

9. Forum Discussion

- Albert Lam: Need for more access to data (costing, performance, climate).
- Richard Kadulski: More research on ventilation requirements as buildings get tighter. Is ASHRAE adequate? Move away from corridor pressurization. How accurate are natural ventilation strategies and how realistic are some of the modelling assumptions.
- Patrick Roppel: How to improve airtightness for MURBs and flat roofs. More data to be able to better estimate what actual ACH would be using different measures.
- Remi Charron: What are metrics that could be used better assess overheating beyond simple temperature metrics that BC CDC vs NRC metrics that considered a °C·hr metric. BC Housing can potentially show the results of pre- and post-retrofit data on IEQ.
- Richard: More information on the benefits of low solar heat gain windows.
- Binghang Li: Limited research showing the impacts of different assumptions (e.g. ACH metrics) used in different codes and standards (BC ESC, NECB, Passive House).
- Richard: Research looking at the more effective filtration strategies to address forest fire smoke.
- Denisa: Is there interest on embodied carbon. Yes, interesting results emerging from NRCan. Patrick R. pointed out the need for better more consistent data for embodied carbon research implications.
- Patrick: Prefab research to help determine how best to incorporate pre-fab to achieve deep-energy retrofits. Lisa Tobber suggest that there would be good synergies to consider coupling the energy retrofits with seismic retrofits.
- Warren: Agree that pre-fab and ventilation are good priorities, as well as the implications of the development of Codes for existing buildings.
- Patrick: Another big topic for existing buildings would be the implications of electrifications.

10. Next BRC Meeting

Next meeting is scheduled for November 22, 2022.