



Advancing Building Retrofits: Energy Efficient Tower Renewal Implementation Program

INTRODUCTION

There are up to 800,000 apartment suites needing retrofits to meet 21st Century standards to ensure healthy, comfortable and resilient housing in Canada. In order to meet Canada's National Housing Strategy (NHS) target of renovating and modernizing 300,000 homes, identifying and scaling cost-effective Canadian solutions for high-rise apartments is critical. However, the retrofit industry is still nascent in Canada, with lack of knowledge, skills, and specialized products leading to inflated costs and perceived risk.

PROJECT OVERVIEW

This Canada Mortgage and Housing Corporation (CMHC) funded research aimed to create an overview of the replicable solutions and tools available to address the many technical challenges facing the Canadian retrofit industry related to the renewal of aging high-rise residential towers which are a critical component of Canada's affordable housing supply. The project focused on the three persistent technical challenges: thermal bridging; upgrading ventilation systems; and cost-effective and non-combustible building envelopes.

FINDINGS

- Advancing the building sector toward “deep energy retrofits”, that is a process that aims at reducing on-site energy use by at least 50%, requires system-wide movement, ranging from supportive financing to industry upskilling to regulatory change.
- The most common barriers limiting the uptake of deep energy retrofits are:
 - Risk avoidance by owners;
 - Absence of regulatory requirements to undertake retrofits;
 - An unsatisfactory return on investment on many deep energy retrofit measures, especially those tied specifically to greenhouse gas emission reductions;
 - Expensive retrofit design solutions due to lack of off-the-shelf products.
- These barriers need to be addressed in order to move market acceptance beyond the early adopters, who are primarily ideologically-driven (i.e.; those who choose to undertake deep retrofits as a result of an organizational mandate) to the industry majority whose participation is influenced by the broader market and regulatory framework.

Figure 1: Ken Soble Tower renewal under construction, Hamilton, Ontario



Source: ERA Architects

IMPLICATIONS FOR THE HOUSING INDUSTRY

- There may be significant opportunities and a strategic business case for advancing made-in-Canada high performance retrofit products
- The federal government, including: CMHC, Natural Resources Canada, National Research Council, The Canadian Commission on Building and Fire Codes, Innovation, Science and Economic Development Canada (ISED) can all play key roles in codes and enforcing, promoting, communicating and in some cases funding new technologies, products and demonstration projects:
 - Products & Supply Chain
 - Contractor Scope and Capacity in Executing Complex Retrofits
 - Means and Methods to Minimize Disruption
 - Inducing Demand and Supporting Delivery & Supporting Industry Growth
 - Performance Standards & Enforcement
- Recommended future phases of this work are as follows:
 1. **Engagements:** Presenting project findings to CMHC and relevant federal stakeholders;
 2. **Solutions Framework:** Advancing gap analysis to create a “solutions framework” that identifies specific product categories as well as specific Canadian and European partners for industry advancement;
 3. **Solutions Demonstration Project:** Working with Canadian and European partners to design and build demonstration unit(s) that address identified critical gaps:
 - a. Ventilation
 - b. Cladding & Envelope
 - c. Balconies
 4. **Best Practice Forum:** Launch cross-Canada ‘Advancing Retrofits’ Forum with industry partners.

Figure 2: Enabling Complete Communities



Source: Tower Renewal Partnership

FOR MORE INFORMATION

Full Research Report

Advancing Building Retrofits

https://eppdscrmssa01.blob.core.windows.net/cmhcprodcontainer/sf/project/archive/publications/nhs/research_and_planning_fund_program/cugr_advancing-building-retrofits_jan-21.pdf

Enabling Complete Communities

https://eppdscrmssa01.blob.core.windows.net/cmhcprodcontainer/sf/project/archive/housing_organizations2/2018--nhs-9---10-tower-renewal-report---enabling-complete-communities.pdf

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