

Two Million Green Homes

CAGBC

Ensuring Canada's Needed New Housing is Affordable, Attainable, and Sustainable



GEO Park, Kingston, ON. Render courtesy of Lemay.

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About CAGBC

The Canada Green Building Council® (CAGBC) provides the products and services the building sector needs to construct and manage buildings that are easier on resources, healthier for people, and more cost-effective. We work with the sector to influence standards, develop best practices, and educate the market on the benefits of green buildings.



Sponsor Recognition

CAGBC would like to recognize the Building Energy Innovators Council (BEIC) for sponsoring this white paper. A diverse group of Real Estate and Corporate leaders founded BEIC in 2016. The council accelerates industry collaboration and innovation to increase the adoption of clean building technologies—including energy efficiency and renewable power solutions that will transform the built environment. It does so while developing world-class clean tech companies, creating jobs, and enabling economic prosperity in a future low-carbon era.



Executive Summary

This paper highlights the importance of investing in sustainability to avoid “fast and cheap” construction as Canada expands its supply of purpose-built rental (PBR) multi-unit residential buildings (MURBs).

It outlines what is working for the real estate and development sectors, identifies key challenges, and details the actions the Canada Green Building Council® (CAGBC) will take to advance sustainable housing as the nation seeks to meet its housing targets.

The number of PBR units is rapidly increasing as a share of Canada’s housing market. As more Canadians transition to living in PBR, they must have access to sustainable, high-quality housing that reduces energy costs and enhances climate resilience, both critical factors in overall affordability. Policymakers, real estate owners, developers, contractors, and non-profit housing agencies must understand that sustainability and cost-effectiveness can go together to deliver high-quality housing efficiently.

The paper presents a comprehensive look at the solutions, barriers, and actions necessary to advance sustainable rental housing, focusing on:

- **Cost-effective, scalable technologies and materials:** Solutions such as heat pumps and improved building envelopes are widely available in the market today and reduce utility costs for PBR owners and tenants, enhance indoor comfort during power outages, and protect against energy price volatility. Ensuring long-term affordability depends on integrating energy efficiency measures into building design from the outset.
- **Policies, building codes, and public investments:** A range of incentives and regulations encourage or require builders to adopt sustainable practices. Building codes set minimum requirements for development, while standards establish performance or sustainable design criteria. Government programs such as the Canada Mortgage and Housing Corporation (CMHC) MLI Select and the Apartment Construction Loan Program already support PBR housing but could further promote energy efficiency, resilience, and greenhouse gas (GHG) emissions reduction.
- **Financing options for sustainable housing:** The last section of this paper highlights available financing solutions such as green loans and green bonds. It also addresses how sustainable building practices mitigate business risks, including those related to carbon pricing, energy and carbon reporting and disclosure, and extreme weather.

CAGBC will pursue various actions to address the structural barriers limiting the widespread adoption of sustainable rental housing. These efforts will involve collaboration with industry and government. The summary table below outlines what is working, the challenges faced, and the corresponding actions.

The actions listed here aim to ensure Canada’s new housing supply will be affordable, attainable, and sustainable. Supporting this position, our paper concludes with recent case studies that showcase how industry players have creatively deployed technologies and financing solutions to deliver sustainable housing today.

	What’s Working	Challenges	CAGBC Actions
Technology	<ul style="list-style-type: none"> • Proven solutions like heat pumps, improved building envelopes, and demand-side management systems are readily available. • Water efficiency measures and solar photovoltaics show strong results. • Prefabrication, modular building, and “designed for resilience” are gaining traction. 	<ul style="list-style-type: none"> • Many developers remain reluctant to adopt new technologies due to inertia and the ease of using natural gas HVAC systems. • Limited investment in capacity building and skills development hampers the broader adoption of sustainable solutions 	<ul style="list-style-type: none"> • Expand training and capacity-building programs, ensuring more workers have skills to build sustainable multi-unit housing. • Advocate for policies that incentivize the adoption of sustainable technologies.
Policy	<ul style="list-style-type: none"> • Programs such as CMHC’s MLI Select and Apartment Construction Loan support sustainable PBR housing. • Regulations such as BC’s Zero Carbon Step Code create a level playing field and drive capacity building. • Voluntary advanced sustainable building standards and systems drive innovation in the industry and provide proof of concept. 	<ul style="list-style-type: none"> • Federal program reliance on a “reference building” approach can constrain innovation. • Some programs have deprioritized energy efficiency. • Many developers incorrectly consider voluntary standards cost-prohibitive, do not understand the value of sustainability investments, and lack in-house capacity to build more sustainably. 	<ul style="list-style-type: none"> • Engage with governments to ensure housing policies prioritize sustainability. • Advocate for performance-based outcomes, like energy use intensity targets, in federal housing programs, ensuring they generate verifiable energy and carbon savings. • Continue to develop and deploy national standards and programs that provide developers with guidance and credible third-party verification.
Financing	<ul style="list-style-type: none"> • Growing investor interest in Environmental, Social, and Governance (ESG) criteria supports investment in sustainable housing. • New International Valuation Standards will consider ESG factors, potentially boosting valuations for sustainable PBR MURB projects. • Private and public funding models are beginning to emerge. 	<ul style="list-style-type: none"> • Traditional real estate financing models overlook the value of sustainability features. • Private-sector examples of innovative financing mechanisms for sustainable housing remain scarce. 	<ul style="list-style-type: none"> • Work with financial institutions to convey the risk mitigation and value offered by sustainable buildings. • Provide developers with cost-benefit analyses to underscore the competitive advantages of sustainable housing.

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Introduction

A confluence of societal shifts and broader trends is driving Canada's housing development sector toward a critical inflection point. This moment holds great promise and opportunity—both for the industry and the Canadians who will ultimately call its projects home.

First, and most obviously, Canada is grappling with an acute housing crisis. The federal government has responded by pairing historic investments in programs and partnerships with ambitious targets for new construction. Ottawa has committed to unlock 3.87 million new homes by 2031, including at least two million new homes above and beyond the 1.87 million already in the pipeline.¹

Despite this ambition, the country is not on track to meet its housing targets. Total housing starts in the nation's six largest census metropolitan areas (CMAs) rose by 4 percent in the first six months of 2024 compared with the same period in 2023. However, when adjusted for population, combined starts were close to the historical average and insufficient to meet growing demographic demand.² High interest rates for loans to cover construction costs have contributed to fewer housing starts.³

A Shifting Demographic: Canada is Becoming a Nation of Renters

While overall supply is falling short, the picture brightens somewhat when viewed through broader societal shifts. Historically, most Canadians owned their homes, particularly single-family detached houses.⁴ But as land prices rise, many Canadians—especially younger ones—are choosing denser urban centres over suburban living and increasingly signing leases instead of mortgages.

Canada is gradually becoming a nation of renters.⁵ In the first half of 2024, purpose-built rental (PBR) multiple-unit residential buildings (MURBs) constituted close to half of Canada's apartment starts, a nearly 30-year high. In 2024, PBR construction did slow down in Toronto, Ottawa, and Vancouver, but growth continues in Edmonton, Montreal, and Calgary, and combined rental construction in the six CMAs reached its highest level since the 1990s.⁶

¹ Government of Canada. "Budget 2024: Fairness for Every Generation." p.27. Available via [canada.ca/budget](https://www.canada.ca/budget).

² "Fall 2024 Housing Supply Report." Canada Mortgage and Housing Corporation (CMHC). September 26, 2024. <https://www.cmhc-schl.gc.ca/professionals/housing-markets-data-and-research/market-reports/housing-market/housing-supply-report>.

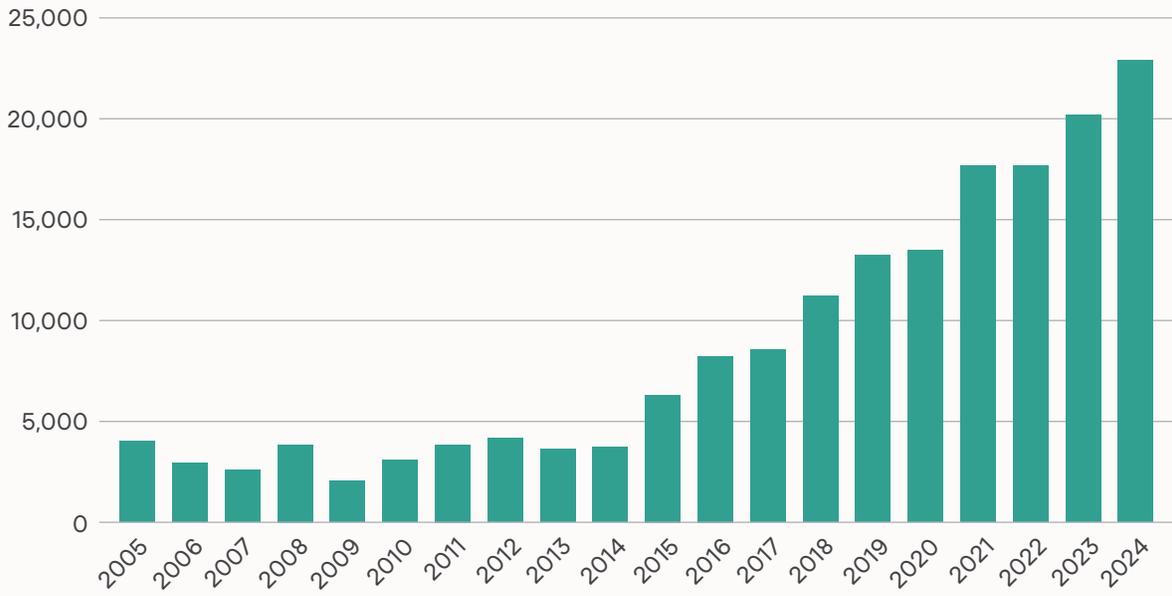
³ Iorwerth, A. "In 2023, higher rates resulted in 30,000 fewer housing starts." October 3, 2024. CMHC. <https://www.cmhc-schl.gc.ca/blog/2024/2023-higher-interest-rates-resulted-fewer-housing-starts>.

⁴ As per the Statistics Canada 2021 Census of Population, 66.5% of Canadians own their own homes, while 33.1% rent.

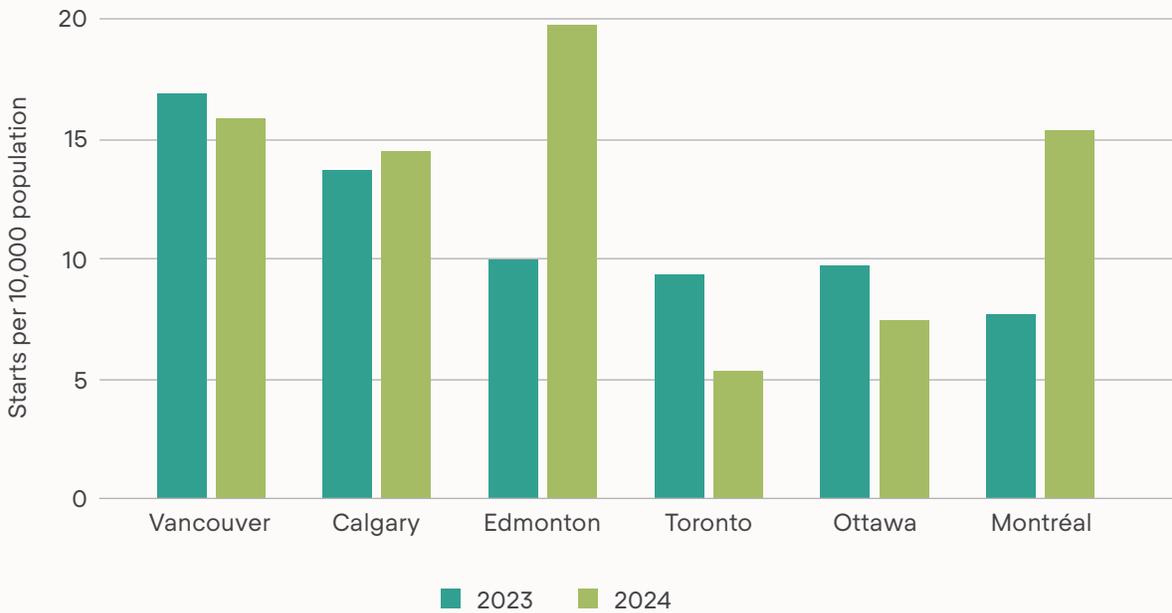
⁵ Hogue, R. and R. Battaglia. "Proof Point: Is Canada Becoming a Nation of Renters?" RBC Economics & Thought Leadership. December 7, 2022. <https://thoughtleadership.rbc.com/proof-point-is-canada-becoming-a-nation-of-renters>.

⁶ CMHC.

Purpose-Built Rental Apartments Starts
 January to June 2024, Nationally (Source: CMHC)



Purpose-Built Rental Apartments Starts
 January to June 2024, Select CMAs (Source: CMHC)



Workforce Shortages: A Barrier to Meeting Housing Demand

Canada's residential construction sector continues to struggle with a worker shortage. BuildForce Canada estimates that the industry will need close to 1.04 million workers by 2033, an 83 percent increase from today's levels to meet Canada's ambitious housing targets.⁷ However, the current trends are concerning; in 2023, residential construction employment contracted by 4 percent.⁸

The sector must attract and retain talent to address the housing crisis and the climate challenge. Workforce development efforts must focus on upskilling the current labour force, attracting new entrants, and equipping them with the necessary tools and knowledge to construct the sustainable, resilient homes Canada needs.

The housing development sector's long-term success will depend on robust investments in capacity building and training, and targeted public investments in post-secondary trades and technical programs.



Photo credit: skynesher.

⁷ "Residential Scenario Outlook 2024-2033 - A construction industry employment estimation to address Canada's housing supply gap." BuildForce Canada. April 2024. <https://www.buildforce.ca/en/residential-2024>.

⁸ Ibid.

The Dual Challenge: Housing Affordability and Climate Action

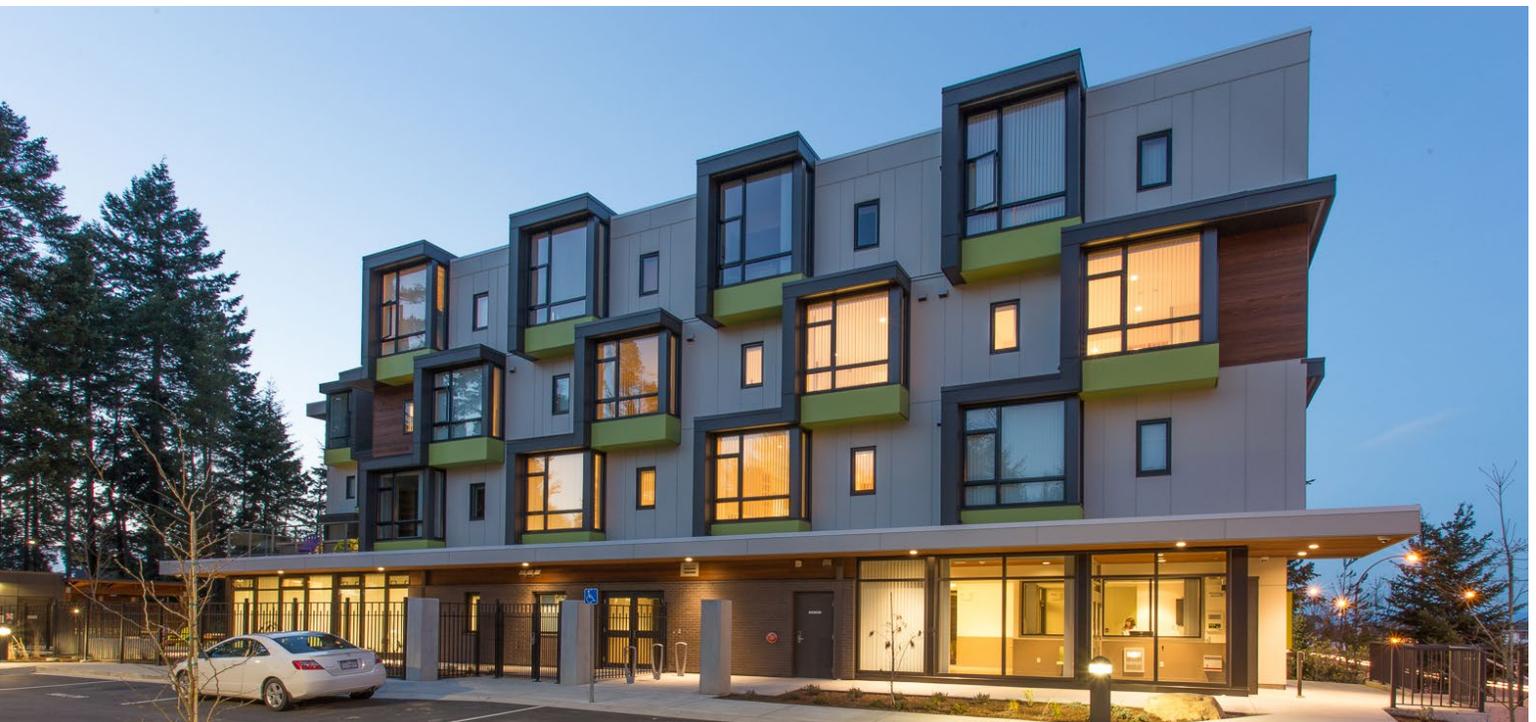
The housing crisis calls on developers to rapidly increase new housing units, but the impact of a changing climate demands these homes emit fewer emissions and provide improved resilience.

Canada has committed to cutting national greenhouse gas emissions by 40 to 45 percent below 2005 levels by 2030 and largely decarbonizing the economy by mid-century. The rationale for action is clear: climate change already affects Canadians through extreme weather, from severe storms and wildfires to rising insurance rates. New housing must protect residents from these events via air purification and cooling technologies and design strategies to minimize flood and wildfire damage.

Resilience is not just about health and safety, but also affordability. The summer of 2024 proved the most expensive season for insurance in history, as the insured losses from floods, wildfires, and hailstorms soared to over \$7.7 billion.⁹ Those directly impacted by these disasters shoulder significant “off the books” financial burdens, as insurance only ever partially covers the full range of costs, and as these extreme weather events increase, all Canadians will inevitably experience rising insurance rates.

Non-rental sustainable MURBS deliver significant benefits for owners, including heightened protection from extreme weather. However, current business models have yet to fully capture the financial benefits and value of sustainable MURBs. Market housing developers generally carry the costs of building improvements, while owners receive most of the benefits. The split incentive has always been the main hurdle for sustainability-motivated developers and home builders.

It's a different story with PBRs, of course. Private sector investors and public and non-profit housing agencies own and operate these buildings and can recoup their up-front investments over time. Still, they depend on government support to offset higher upfront costs. A recent BMO Climate Institute and Forum Asset Management report found that zero-carbon rental MURBs carry a capital cost premium of two to 3.5 percent but are still profitable when backed by government investments. On the non-market side, a report from BC Housing found that high-performing buildings could be built at a comparable cost to lower-performing ones as long as sustainability was factored into projects from the beginning.¹⁰



Uplands Walk, Nanaimo, BC. Photo courtesy of Pacifica Housing.

⁹ Insurance Bureau of Canada. “Summer 2024 shatters records for severe weather damage: Over \$7 billion in insured losses from floods, fires, and hailstorms. Sept 2024. <https://www.IBC.ca/news-insights/news/summer-2024-shatters-records-for-severe-weather-damage-over-7-billion-in-insured-losses-from-floods-fires-and-hailstorms>.

¹⁰ BC Housing. “Does high performance construction need to cost more?” June 2024. <https://www.bchousing.org/sites/default/files/media/documents/Building-Innovation-Case-Study-June-2024-Final.pdf>.

Building the Future: A Path Toward Affordable, Sustainable Housing

CAGBC and industry stakeholders recognize the importance of private sector and government leadership in scaling up energy-efficient, low-carbon, resilient housing. Industry can leverage new technologies and best practices, while policy frameworks support this transition with public investments. Governments will need to provide initial relief while the market adjusts and the cost of new technologies and materials come down, along with the broader availability of required skills and services.

A more sustainable housing stock is affordable. Sustainable buildings will reduce utility bills for Canadians and reduce pressure on power grids, helping to free up electricity for other sectors. CAGBC looks forward to collaborating with governments, industry, and financial institutions to ensure that the two million new homes built in the coming years are affordable, attainable, and sustainable.



Barrie, ON. Photo credit: Yelena Rodriguez.

Scope, Audience, and Definitions

CAGBC focused this paper on the technologies, policies, and financing tools with the most promise to scale up sustainable, purpose-built rental (PBR) multi-unit residential buildings (MURBs)—both market and non-market.

Specifically, this document outlines the role of tested and readily available sustainable technologies and enabling policy and financing. CAGBC is interested in approaches and levers that can minimize build costs for developers *and* operating costs for residents—ultimately contributing to greater overall affordability.

Definitions

This paper focuses on affordable, attainable, and sustainable housing. Since each of those terms covers much ground, this section explains how this paper scopes them. It also briefly defines market transformation as a concept central to CAGBC's work and these conversations.

The paper addressed both non-market PBR housing (affordable housing, generally operated by non-profits and public agencies) and market-based PBR housing, which is leased to tenants at market rates. These are defined below:

Affordable

This paper uses the Canada Mortgage and Housing Corporation (CMHC) definition of affordable housing as that which costs a given household less than 30 percent of its before-tax income. It focuses on affordable housing managed by public agencies and non-profit organizations that access subsidies to develop and manage it. CAGBC identifies this as non-market housing, but it is also often referred to as below-market housing.

Attainable

Attainable housing describes a household's ability to enter the local real estate market and graduate to progressively higher housing levels over time. The term assumes the existence of a diversity of housing types, sizes, tenures, and costs. This concept refers to rental housing and home ownership; however, this paper limits it to market-based rental MURBs which are "attainable" for working families and individuals who have the means to pay market rents.

Sustainable

Sustainable homes are green buildings—that is, designed, constructed, and operated to minimize environmental impact and enhance the well-being of those living there. For this paper, CAGBC focuses on technologies, practices, and policies shown to:

- Improve energy and water efficiency,
- Reduce operational carbon, and
- Strengthen climate resilience.

The latter term describes strategies that help withstand climate change impacts such as heavy precipitation and flooding, extreme heat, and degraded air quality.

A climate-resilient MURB aims to maximize occupant health, safety, and comfort through such events. While CAGBC is aware of the role of embodied carbon in overall emissions, this paper focused on operational carbon. Generally, operational carbon savings are derived from savings in energy and thus best-placed to yield a return on investment over time.

Market Transformation

Market transformation is a process whereby energy-efficiency and emission reduction innovations are introduced into—and eventually penetrate a large portion of—a marketplace. The process results in structural change, such that the market does not regress to lower levels of efficiency at some later time.¹¹



Granville Island, BC. Photo credit: LeonU.

¹¹ Geller, Howard, and Steven Nadel. "Market transformation strategies to promote end-use efficiency," Annual Review of Energy and the Environment 19.1 (1994): 301-346.

Process

CAGBC has used a variety of approaches and sources to identify solutions with the most promise to scale up affordable, attainable, and sustainable purpose-built rental MURBs—and the barriers holding them back.

These approaches and sources include:

- An open-ended **questionnaire** distributed to participants at a June 2024 CAGBC Building Lasting Change workshop focused on housing affordability, and discussions at the event itself.
- Structured, non-attributable **interviews** with developers of both affordable and attainable MURBs, held between July and September 2024, and
- A review of recent **assessments** from research bodies and industry associations, such as the BMO Climate Institute, Forum Asset Management, REALPAC, BC Housing, and the Task Force for Housing and Climate.



Korean Church, Ottawa, ON. Render courtesy of Windmill Developments.

Themes

CAGBC adopted three broad themes to inform conversations on how best to scale up affordable, attainable, and sustainable PBR MURBs and lower barriers to their development.

These three themes are:

1. The **technologies and materials** commonly used in sustainable construction. Examples include air- and ground-source heat pumps and heat-recovery ventilators.
2. The **policies, regulations, and public investments** that are helping unlock sustainable purpose-built rental MURBs. Examples include direct investments and municipal building performance standards.
3. The needed **financing** products and mechanisms to leverage private sector capital for additional investment.

This section delves into these themes, highlighting promising developments, remaining challenges, and recommended actions.

Technologies and Materials

Various cost-effective, readily available, scalable technologies and materials can bolster the business case for affordable, attainable, and sustainable multi-unit rental housing. These solutions can help reduce utility bills for building owners and/or tenants, support more consistent and comfortable indoor conditions in the event of a power outage and protect against energy price volatility.

Minimizing energy costs is critical to ensuring long-term affordability. This section explores the opportunities, and an appendix offers case studies that dive more deeply into specific technologies referenced here and how they are used in housing.

What's Working

After interviewing industry leaders and reviewing recent literature, CAGBC has identified seven proven solutions that developers can adopt today to improve energy and water efficiency, reduce operational carbon, and strengthen climate resilience. While some systems and approaches are commonplace in new developments, others are not widely practiced. All have the potential to be scaled up.

Regarding supporting technology, the Clean Technology Investment Tax Credit (CT-ITC) allows developers to deduct up to 30 percent of the capital cost of certain sustainable technologies, including solar photovoltaics, battery storage, and air- and ground-source heat pumps. One assessment finds that the CT-ITC significantly improves the business case for zero-carbon MURBs.¹²

¹² Selva, Alma Cortés and Adduci, A. "Canadian Zero-Carbon Multi-Unit Residential Buildings: An Analysis of the Cost and Asset Value." August 29, 2024. BMO Climate Institute. <https://commercial.bmo.com/en/ca/resources/commercial-real-estate/canadian-zero-carbon-multi-unit-residential-buildings-an-analysis-of-the-cost-and-asset-value>.

Electric Heat Pumps

- The newest cold-climate heat pumps are efficient as low as -15°C , though they generally need a backup heat source for more frigid temperatures.¹³ That said, air-to-water ground source heat pumps have better performance at lower temperatures, and next-generation prototypes are delivering 100% heating capacity at -25°C and below, with significantly higher efficiencies and without needing auxiliary heat.¹⁴
- Heat pumps can incur a modest capital cost premium compared to gas space- and water-heating equipment. However, case studies demonstrate that carefully designed all-electric MURBs can cost the same to build, or even less, than those that burn gas.¹⁵
- Heat pumps are also increasingly competitive with gas equipment on an operational cost basis.¹⁶



Image courtesy of Mitsubishi Electric Heating & Cooling.

Improved Envelopes

- A thoughtfully designed building envelope—with good-quality doors and windows, continuous insulation, airtightness and sealing, heat recovery ventilation, and minimal thermal bridging—will improve energy efficiency and reduce heating and cooling costs, benefiting residents who pay utility costs.¹⁷
- High-quality building envelopes also improve climate resilience by preventing wildfire smoke intrusion and limiting extreme temperature swings.¹⁸

Demand-Side Management and Optimized Controls

- Purpose-built rental housing developers can adopt straightforward demand-side-management strategies to improve energy performance. Sub-metering, for example, is an approach where a developer specifies individual utility meters for each unit instead of a bulk meter for the whole building. It supports improved cost tracking and reduction, typically without a capital cost premium.
- Building automation systems allow property managers to monitor, control, and fine-tune energy and water systems via a single interface. Improved oversight over temperature, electricity, and other systems allows for operational efficiency gains, yielding cost savings.

Water Efficiency Measures

- Water consumption can account for 17% of a MURB's annual utility costs, making it a relevant source for cost reductions and improved efficiency.¹⁹ Given the emissions associated with energy to pump and treat water, water efficiency also reduces emissions.
- Siting water heating systems close to the point of delivery improves water and energy efficiency, as less heat is lost in long pipe runs, and less electricity is needed for recirculation pumps.²⁰

¹³ Riddell, S., and Haley, B. "Canadian Heat Pump Myth Buster." Efficiency Canada. September, 2023. <https://www.energycanada.org/wp-content/uploads/2023/09/Canadian-Heat-Pump-Myth-Buster-EC.pdf>.

¹⁴ Haddad, K., et al. "Energy and Economic Performance of Cold-Climate Air-Source Heat Pumps for Three Commercial Building Archetype Models." 2020. CanmetENERGY, Ottawa, Natural Resources Canada. https://publications.ibpsa.org/proceedings/esim/2020/papers/esim2020_1256.pdf.

¹⁵ "Construction Cost Analysis of High-Performance, Multi-Family Buildings in BC." June 2021. ZEBx. <https://www.zebx.org/construction-cost-analysis-of-high-performance-multi-unit-residential-buildings-in-bc>.

¹⁶ Poirier, M. and Cameron, C. "The Case for Building Electrification in Canada." June 2023. The Transition Accelerator. <https://transitionaccelerator.ca/reports/the-case-for-building-electrification-in-canada>.

¹⁷ "Making the Case for Building to Zero Carbon." February 2019. Canada Green Building Council. <https://www.cagbc.org/news-resources/research-and-reports/making-the-case-for-zero-carbon-building>.

¹⁸ Franconi, E., et al. "Enhancing Resilience in Buildings through Energy Efficiency." July 2023. Pacific Northwest National Laboratory. https://www.energycodes.gov/sites/default/files/2023-07/Efficiency_for_Building_Resilience_PNNL-32727_Rev1.pdf.

¹⁹ Achieving High Performance Multi Unit Residential Buildings: The Opportunities." Canada Mortgage and Housing Corporation.

²⁰ "Design Guide for Domestic Hot Water Heat Pumps in New Multi-Unit Residential Buildings." September 2024. https://www.bchousing.org/sites/default/files/media/documents/Design_Guide_for_Domestic_Hot_Water_Heat_Pumps_in_New_Multi_Unit_Residential_Buildings.pdf.

On-Site Solar Photovoltaics

- Solar photovoltaic panels generate renewable electricity, including rooftop systems.
- The costs of solar are at par with other energy sources. Moreover, when coupled with storage, on-site renewables offer a measure of climate resilience in the event of a power failure.
- Rooftop systems run into scale issues due to space constraints on high-rise MURBs and competing interests (e.g., elevators, rooftop gardens, and other HVAC systems). However, Building-Integrated Photovoltaics (BIPV) offer another option to generate renewable energy on-site. Some examples are emerging of existing buildings retrofitted to incorporate solar generation on vertical surfaces.²¹



Photo credit: ArtistGNDphotography.

Prefabrication

- Offsite, modular, or panelized construction refers to constructing building components in a controlled factory environment and then transporting them to the project site for assembly.
- Benefits include strong potential economies of scale through lower labour and construction costs, faster construction schedules, and less waste. Improved control over insulation and sealing in a factory setting can also enhance the energy performance of the final building.

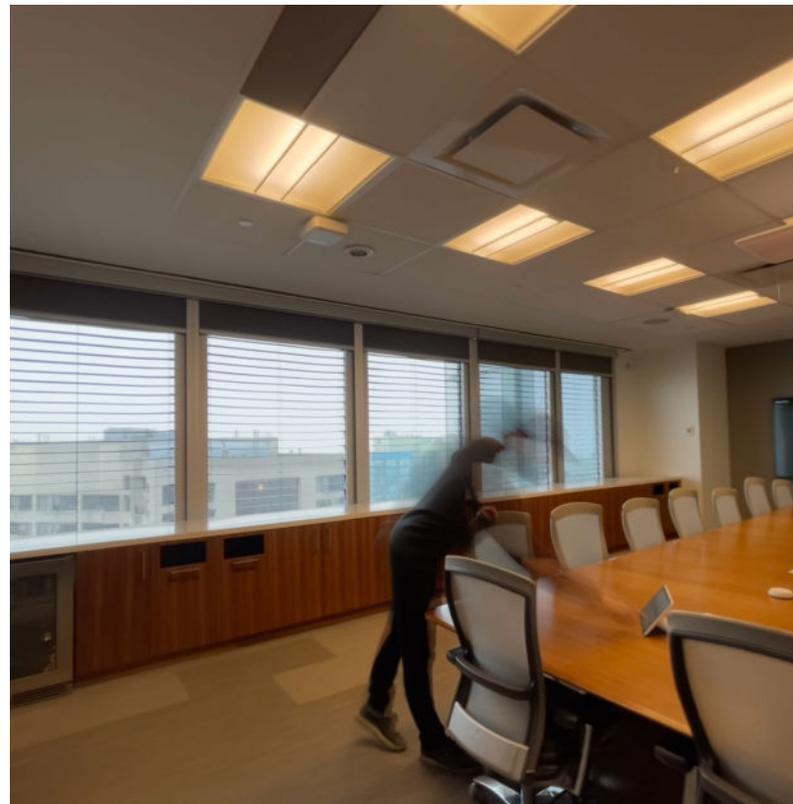


Photo courtesy of Morgan Solar.

Resilience Measures Aligned with Emissions Reductions

- A range of cost-effective, passive design strategies can improve a building's resilience to extreme weather while reducing the energy needed for space conditioning. For example, architects and designers can incorporate low-cost passive cooling measures, such as external, manually operable shutters and blinds. They can also improve cross ventilation through building design and orientation and by specifying high albedo building materials (e.g., white materials for roofs) to reduce envelope surface temperatures.²²

²¹ Oved, M. "This apartment building needed new balcony railings. So, the landlord put in solar panels." August 6, 2024. Toronto Star. https://www.thestar.com/real-estate/this-apartment-building-needed-new-balcony-railings-so-the-landlord-put-in-solar-panels/article_3dadd012-3327-11ef-92a6-9fd197b72ef9.html.

²² See the various reports and resources produced by the Intact Centre on Climate Adaptation, at <https://www.intactcentreclimateadaptation.ca/recent-reports/>.

Challenges

Interviewees identified the above measures as keys to improved energy and water efficiency, reduced operational carbon, and strengthened climate resilience. They also identified various perceived and actual barriers, as summarized below.

- Though innovation is steadily improving heat pump performance, and costs continue to come down, industry inertia and risk aversion may hamper adoption. Gas equipment has delivered reliable heat for decades, and absent clear direction from the government and/or regulators, some remain reluctant to embrace a new paradigm.
- While innovative technologies are in the market, more scaling and investment are needed. There is a clear opportunity to align technology advancements more broadly with housing investments.
- Efforts to scale up new technology use through the Clean Technology Investment Tax Credit have proven valuable. Still, some technologies—such as specific types of heat pumps—are ineligible, suggesting there is further room to expand this credit.
- The modest cost premium associated with sustainable buildings is, to some degree, a result of unfamiliarity with new practices and technologies. For example, outboard insulation installation and meticulous air sealing require additional care and attention. This increases labour costs until builders and trades become more comfortable with these practices. In jurisdictions such as Toronto and Vancouver, codes and regulations requiring elevated energy levels and climate performance have spurred some developers to build in-house expertise on ground-source heat pumps and other zero-carbon technologies. This up-front investment in capacity building has helped improve the economics of sustainable building.

Recommendations and Actions

Advancing sustainable housing requires investment in clean technology research and learning opportunities for skilled tradespeople and other professionals. Building sustainably will create jobs with specific skills and provide homes that will support Canadians by reducing utility bills and providing better protection against extreme weather events.

To advance investment in sustainable technology, CAGBC will:

- Continue to work with the industry (developers, owners, housing agency staff and contractors) to provide training, education pathways and capacity building in construction technologies, materials, and methods. CAGBC will build on its Low Carbon Training Program developed with industry and partners, which provided more than 4,000 participants with low-carbon building skills.
- Engage policymakers to prioritize housing as a distinct focus within existing public funding for sustainable and/or innovative new technologies. This will help ensure that Canadian efforts to scale up technology also help accelerate sustainable housing.

Policies, Regulations, and Public Investments

CAGBC recognizes that governments are critical to backstop industry leadership and help drive market transformation. At all levels of government, various incentives and regulations encourage or require builders to deliver sustainable new housing. Building codes outline the minimum requirements for development and construction, while green building standards set up performance or design criteria, generally to support sustainability or other outcomes.

What's Working

Though a comprehensive policy scan is beyond the scope of this paper, this section outlines a sample of public policies and actions that CAGBC research suggests are helping unlock purpose-built rental MURBs that are affordable, attainable, and sustainable.²³

- Several expert interviewees cited the CMHC MLI Select program, which offers developers discounted mortgage loan insurance if they exceed the 2017 National Energy Code for Buildings requirements.
- Several of Canada's larger cities have either implemented requirements for increasing energy and carbon performance in new MURBs or have signalled their intention to do so. This has spurred developers to cultivate in-house expertise in zero-carbon solutions such as ground-source heat pumps.
- Dozens of British Columbia communities now require builders to deliver low or zero-carbon new construction via the Zero Carbon Step Code (ZCSC). The province estimates that nearly half of all units in new mid- and high-rise MURBs will now be built in municipalities that have already adopted the ZCSC or equivalent regulations.²⁴
- Affordable housing providers such as Ottawa Community Housing and BC Housing access the CMHC Affordable Housing Fund for low-interest and forgivable loans to projects, and that federal agency enhances the offer for those that achieve energy and GHG reductions.
- Affordable housing providers often have their requirements for energy, GHGs, and resilience in projects they fund the majority of.

Challenges

Research for this paper suggests that while enabling policies and incentives are helping make the case for sustainable housing projects across the country, the landscape remains uneven. Widely varying requirements and incentives send mixed signals and constrain market transformation. Some examples follow:

- At a federal level, not all housing programs and policies align with sustainability imperatives. Many focus strictly on supply without acknowledging corresponding net-zero commitments and the need to ensure Canadians have access to climate-responsive and resilient housing. This can lead to higher ownership costs in the future, as housing not built sustainably will eventually need to be retrofitted.
 - For example, while helpful, the CMHC MLI Select program flagged above illustrates how the government prioritizes speed and volume over sustainability criteria. In June 2024, the CMHC sharply devalued energy efficiency in its eligibility criteria scoring scheme.²⁵
- Federal programs and model codes require proposed buildings to achieve a set percentage improvement in energy performance over a baseline "reference building." This approach requires developers to take extra steps, and several interviewees said it is less reliable than an outcomes-based approach, which requires a project to achieve absolute and measurable performance targets.²⁶
- Federal and provincial housing programs do not adequately account for climate risk and resilience in their funding criteria, unintentionally incentivizing development in high-risk areas.²⁷
- Finally, permit approval processes remain extremely lengthy and vary across Canada. This increases up-front costs for developers and, once a project does receive approval, makes them reluctant to shoulder any additional costs or delays associated with sustainability.

²³ For a robust and current policy landscape assessment, see Vérin, A. and Poirier, M. "Building Heating Decarbonization – Jurisdictional Scan. Version 2.0." Building Decarbonization Alliance. September 2024. <https://buildingdecarbonization.ca/report/jurisdictional-scan-building-heating-decarbonization>.

²⁴ "Implementation Updates: Local adoption of the Zero Carbon Step Code." Building and Safety Standards Branch. Province of British Columbia. https://energystepcode.ca/implementation_updates.

²⁵ The CMHC awards a proposed MURB "points" for using technologies and strategies that increase its energy efficiency performance. Prior to June 2024, builders received 100 points for exceeding energy code requirements by at least 40%. Thereafter, they received 50 points for doing so. The agency reallocated the points to up-front affordability measures.

²⁶ Lockhart, K. and Haley, B. "Strengthening Canada's Building Code Process to Achieve Net-Zero Emissions." October 2020. Efficiency Canada. <https://www.energycanada.org/report-strengthening-canadas-building-code-process>.

²⁷ Miller, S. and Carriere, Z. "Higher ground: Keeping new homes out of harm's way." June 3, 2024. Canadian Climate Institute. <https://climateinstitute.ca/higher-ground-housing-affordability>.

Recommendations and Actions

Governments and industry must collaborate to align housing programs with sustainability requirements. Doing so will maximize the return on investment for owners while lowering energy costs for renters. It will also avoid the risk of paying twice—the first time to build the housing as quickly and cheaply as possible and the second time to retrofit it to ensure rents remain affordable and buildings are adapted to a changing climate. Meanwhile, the Task Force for Housing & Climate offers multiple recommendations to reduce climate risk and increase resilience.²⁸

CAGBC will continue to advocate for policies that incentivize and support sustainability for the best outcomes, particularly minimizing utility bills and avoiding costly future retrofits. Specifically, CAGBC will:

- Support and train developers and owners to include sustainability targets in their procurement and planning processes. This will help companies identify and capture the value created in up-front sustainability investments and effectively plan work teams.
- Advocate for outcomes-based performance targets for investments in public housing and crown corporation programs or projects. Clear performance targets will simplify the development process, enable reduced energy consumption and emissions, and improve home resiliency.
- Continue providing government, developers and owners with market guidance and verification support for sustainable housing through proven, credible standards that address the many co-benefits of green buildings or prioritize reducing carbon emissions.



Richmond, BC. Photo credit: Volodymyr Kyrlyuk.

²⁸ "Blueprint for More and Better Housing," March 2024. Task Force for Housing & Climate. <https://housingandclimate.ca/blueprint>.

Financing and Insurance

Sustainable technologies and practices still carry a capital cost premium in PBR housing projects. Although many sustainable technologies yield cost savings over time, the additional up-front costs can make it difficult to secure sufficient financing for some owners and developers. To date, government investments have helped to bridge the gap, covering what the market is currently not.

This section discusses how developers and owners can mobilize capital to increase the uptake of sustainable market housing. It also touches on how the models for covering the associated cost premium might be adapted to reflect the current realities of climate risk better.

Purpose-built-rental market MURB developers generally pursue three avenues to cover the capital cost premiums associated with the above-code climate and efficiency performance. First, they secure funding from one or more investors who expect a return on a market-based project. Second, they obtain traditional bank financing. And finally, they access government funds administered through private banks or non-profits to support market-based or below-market sustainable housing.

A recent REALPAC survey found that 41 percent of the association's members currently access one or more sustainable finance mechanisms—mainly green bonds, sustainability-linked loans, and green construction loans.²⁹ In 2023, these issuances totalled \$1.5 billion.³⁰

What's Working

- A small but growing group of investors and lenders now consider Environmental, Social, and Governance (ESG) ratings and weighting criteria to evaluate the sustainability of a property and assess its long-term value.
- The new International Valuation Standards (IVS), which will take effect in February 2025, explicitly directs valuers that ESG factors “should be considered in valuations to the extent that they are measurable and would be considered reasonable by the valuer applying professional judgement.”³¹ The new standards will impact how buildings are valued at the point of sale, which will affect purchase prices.

- Similarly, as CAGBC was finalizing this report, the Canadian Sustainability Standards Board proposed new Sustainability Disclosure Standards, which will impact reporting on climate risk.³²
- Private banks also finance sustainable housing. In 2021, BMO committed \$12 billion to help finance affordable mortgages in below-market (affordable) purpose-built rental MURBs. As of mid-2023, the bank had allocated \$2.6 billion of those funds to projects.³³



1101 & 1105 Seymour Street, Vancouver, BC.

²⁹ “2024 Sustainability Industry Report - Commercial Real Estate.” REALPAC. <https://realpac.ca/product/sustainabilityreport2024/>.

³⁰ As a caveat, this sum captures all asset classes, not just residential.

³¹ “Beyond Numbers: Incorporating ESG into International Valuation Standards.” March 2024. International Valuation Standards Council. <https://www.ivsc.org/esg2024/>.

³² “Government advances Made-in-Canada sustainable investment guidelines to accelerate progress to net-zero emissions by 2050.” October 9, 2024. (News release.) Department of Finance Canada. <https://www.canada.ca/en/department-finance/news/2024/10/government-advances-made-in-canada-sustainable-investment-guidelines-to-accelerate-progress-to-net-zero-emissions-by-2050.html>.

³³ “The Sky’s the Limit for Affordable Housing.” 2023 Government, Reserve & Asset Managers Conference. BMO. May 10, 2023. <https://capitalmarkets.bmo.com/en/news-insights/sustainable-finance/financial-institutions/skys-limit-affordable-housing/>.

Challenges

- Although private sector financing options exist for sustainable housing, they remain insufficient for the needed scale.
- Risk assessments do not yet adequately capture the benefits of sustainable housing. For instance, a developer may opt to strengthen a MURB's envelope to improve energy efficiency and occupant comfort during a power outage. But higher quality materials are more expensive, and where codes do not require them, they may appear on the balance sheet as an unnecessary expense and, as such, a financial risk.
- Financial models should instead capture the value of such investments with preferential financing and/or a better building valuation. With limited exceptions, a sustainable PBR building will receive the same financing as its non-sustainable counterpart.
- Similarly, the industry has not standardized an approach for how an owner, developer, or lending institution should account for carbon risk or the long-term benefits of green investments. Essentially, the market needs to catch up to new climate realities.³⁴
- The IVS's direction to consider ESG gives Canada's real-estate appraisers the green light to determine a project's climate, energy, and resilience characteristics. Similarly, the federal government has recently announced "Made-in-Canada" sustainable investment guidelines and mandatory climate-related disclosures for large, federally incorporated private companies.³⁵ That said, many years of implementation work lie ahead. The new standards are not well understood and have yet to impact valuation and sales in the market.
- A November 2022 Deloitte Canada survey of Canadian commercial real estate owners found that they do not ascribe strategic importance to ESG efforts, even as the global connection between ESG performance and increased project value continues to strengthen.³⁶
- While providers of below-market housing do not focus on ensuring a financial return on investment, they nonetheless need to ensure they can cover the costs of sustainable buildings.
- Consideration of sustainable value in real estate financing modes and valuation will eventually catch up. As the industry seeks to address the housing crisis and reduce GHGs, the need for time-limited government intervention at all levels remains critical to fill a funding and incentive gap in the market.

Recommendations and Actions

Investments and construction practices are pivoting to deliver more sustainable housing. However, as noted, the market still has not caught up to realities, and the shift is presenting new challenges that need time-limited relief. Carbon pricing is generally the best instrument to do so, as it internalizes the full cost of high-emissions equipment. Absent clear government signals, the industry will need to identify how to factor carbon risks into real estate decision-making.

To support sustainable housing in the market, CAGBC will:

- Engage with government and the finance sector, publish business case studies, and support demonstration projects to encourage both parties to begin accounting for the full value of sustainable building and advance financing mechanisms with preferential treatment for sustainable housing.
- Provide owners and developers with timely market research that clarifies costs and long-term benefits and highlights the competitive advantage of sustainable buildings. This action will enable the industry to collectively improve financial models to accelerate the decarbonization of the real estate industry. Understanding the long-term benefits of sustainability can support both market and non-market housing providers.

³⁴ A similar issue is emerging with insurance. Typically, insurance requires owners to build back "like for like" after a disaster. However, as climate change causes more extreme weather events, some insurers are looking at options to incorporate resilience into rebuilding. Insurers are also considering how to incorporate the value of resilient technologies, like solar panels, into insurance premiums. More work is needed in this area.

³⁵ "Government advances Made-in-Canada sustainable investment guidelines and mandatory climate disclosures to accelerate progress to net-zero emissions by 2050." Department of Finance, Canada. Oct. 9, 2024. <https://www.canada.ca/en/department-finance/news/2024/10/government-advances-made-in-canada-sustainable-investment-guidelines-and-mandatory-climate-disclosures-to-accelerate-progress-to-net-zero-emissions.html>.

³⁶ "How can ESG be profitable for real estate?" Deloitte Canada. <https://www.deloitte.com/lu/en/Industries/real-estate/perspectives/esg-real-estate-insights-series.html>.

Conclusion

As Canada faces the dual challenges of a housing crisis and the urgent need for climate action, investment in sustainable, purpose-built rental (PBR) multi-unit residential buildings (MURBs) is critical.

This paper underscores that sustainability and affordability are not competing priorities but complementary goals. Investing in sustainable technologies, adopting supportive policies, and expanding innovative financing mechanisms can spur needed new housing that is not only cost-effective but also resilient to climate change.

The solutions outlined in this paper present a clear path forward. However, government, industry, and financial institutions will need to collaborate to meet Canada's ambitious housing targets while also addressing climate targets. CAGBC will work with these groups to help support the necessary market transformation.

By investing strategically in sustainable housing, Canada can build an additional two million new homes while reducing greenhouse gas emissions, strengthening resilience to extreme weather events, and ensuring long-term affordability for Canadians. The time to act is now, and CAGBC is ready to lead the charge as we transform Canada's housing sector into a model of sustainability and innovation.



308 Colony, Winnipeg, MB.

GEOpark

Kingston, Ontario
Podium Developments



GEOpark is Podium’s first zero-carbon designed development and certified under CAGBC’s Zero Carbon Building – Design Standard™. GEOpark responds to several needs, including the City of Kingston’s declared climate emergency, Kingston’s immediate need for new housing, the federal government’s drive for sustainable development and the province’s demand for new housing stock. It is also one of the first projects to pursue the City’s Green Standard Community Improvement Program (CIP).

The project is the outcome of the team’s desire to challenge itself with understanding new technologies and implementing new systems. It is the fourth of four buildings in Kingston for the same stakeholder group of institutional investors and primarily focused on energy efficiency as the main investment thesis.

The all-electric, purpose-built rental building has 176 residential units with retail at grade. It has been designed to include:

- An efficient envelope that mitigates thermal bridging
- A geo-exchange field connected to a Variable Refrigerant Flow Heat Pump system providing space heating and cooling. The geo-exchange system reduces energy use and operating costs
- A CO2 air source heat pump that generates domestic hot water
- Low carbon concrete to help reduce the embodied carbon of the structure
- EV chargers are provided in the single level of below grade parking

Podium decided to design, build, and own the geo-exchange system as opposed to entering an energy-as-a-service agreement with a third-party installer and operator, thus reducing up front capital financing costs and opening the door to an additional long-term revenue stream.

The developer obtained primary debt financing through a CMHC-insured loan under the MLI Select program, which provided a lower cost of financing for the project. Energy efficiency helped Podium optimize points within its application. The approach to design a building with lower operational and lifecycle costs, and reduce risks associated with carbon taxes, were enough to convince Podium that a business case to pursue zero carbon on this project was a financially viable.

Windmill Developments Standard

A Portfolio Strategy to Achieve Zero Carbon
Windmill Developments, Ottawa and Toronto

Windmill Developments' commitment to zero carbon is driven by the investment community, specifically the One Planet Living Fund—an investment fund that gives a voice to responsible capital. The fund requires all buildings that it finances to meet strict zero carbon commitments, including a commitment to not use combustion on-site.



Developing a portfolio wide approach to electrifying its new MURBs has been critical to establishing a consistent design standard for all projects, meet investor demands, and maintain its position as one of the greenest developers in North America.

Windmill has partnered with Epic Investments to create the One Planet Living Real Estate Fund, a development impact fund delivering environmental, social and market financial returns. The fund has 10 active projects across the Greater Toronto Area and Ottawa and operates under the One Planet Living framework for transparent validation and reporting of impact-driven outcomes. The Fund is targeting an internal rate of return (IRR) of 15 to 20 percent.

Urban Equation, Windmill's sustainability consultants, are tasked with evaluating the cost benefits associated with new technologies, and work hand in glove with the project delivery team to identify low carbon solutions, assess and reduce risk, and build a business case.

As a result, energy service contracts for geo-exchange, and green loans for energy conservation measures, are typical approaches used by Windmill and Urban Equation to meet investor returns.

308 Colony

Winnipeg, Manitoba

UWCRC2.0 and Lotus Holdings Winnipeg



308 Colony is a 21-storey, 214 residential mixed-use residential building, and one of two recently completed zero carbon developments by UWCRC, and certified under CAGBC's Zero Carbon Building – Design Standard™. Approximately 40 percent of the units are affordable, based on the CMHC definition.

The building is a socially inclusive, mixed-income, mixed-use apartment complex that emphasizes a deep sense of community, ownership, and participation. The mixed-income model breaks down socio-economic and cultural barriers and the stigma that can often accompany affordable/social housing tenancies. The approach from the outset ensured sustainability, affordability, and equity were mutually compatible.

To achieve next zero, the all-electric building will use 55 percent less energy by employing a range of strategies, including:

- Four-pipe fan coil to allow for year-round heating and cooling in the suites.
- Air source heat pumps, mounted on roof and operated by a glycol solution.
- Electric boiler with gas boiler as back up.
- An in-line R-134 water-water heat pump provides a temperature lift to heat the water and is connected to the main building heating loop.
- Building integrated PV system in the building façade.

The project's commitment to sustainability and affordability allowed the company to access to a wider range of grant and non-repayable contributions, securing funding for 39 percent of the project costs from those sources, with the remainder funded by construction financing through CMHC's MLI Select program as well as land equity.

A notable financial outcome of incorporating sustainable technologies in the project was the inclusion of a rooftop glycol system for domestic hot water which cost approximately \$120,000 but resulted in a net savings of \$480,000 on other equipment.



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