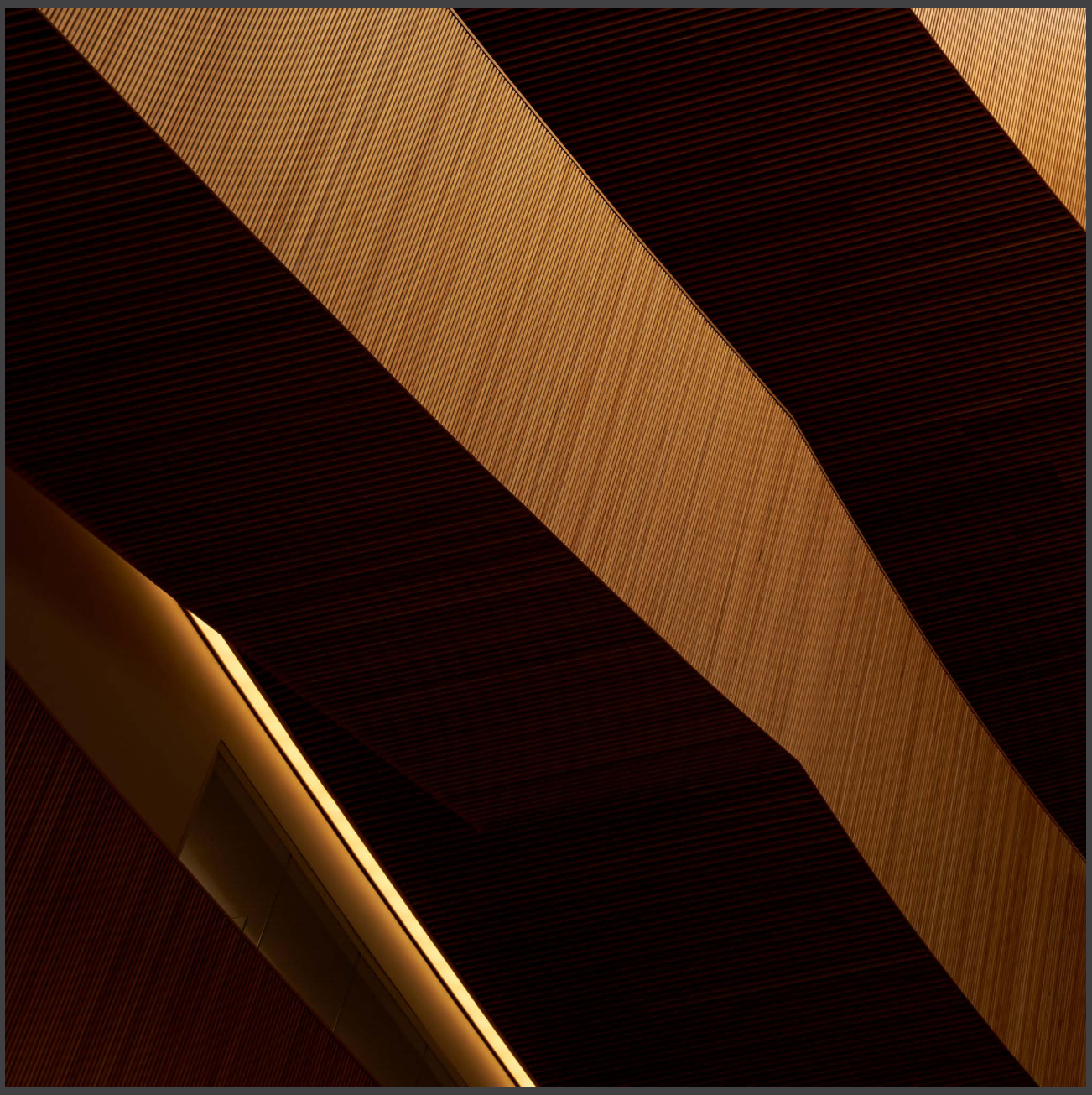
# Rethinking Value

## The Business Impact of Institutional Buildings



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# At a Glance

## Objective

Assess the business case for green building certification in Canadian institutional buildings – including post-secondary campuses, community centres, and student housing.

## Methods and Sample

Mixed-methods primary research comprising five project surveys and three semi-structured interviews with owners, operators, and developers of certified institutional buildings in British Columbia and Ontario.

## Headline Findings

This brief examines the business case for buildings certified to Leadership in Energy and Environmental Design® (LEED®) Gold or Platinum — and/or the Zero Carbon Building Standards™, specifically focusing on institutional buildings, including community centres, recreation facilities, and affordable housing projects led by non-profit operators. The sample captures publicly funded, mission-driven assets with ownership horizons often exceeding thirty years — a fundamentally different context from market-rate development, where investment decisions are typically evaluated against shorter return timelines and exit-oriented metrics.

Capital cost premiums ranged from effectively zero to 10 percent for new construction. One project reported no material incremental cost once mechanical room footprint savings and avoided equipment were factored into the total budget. This finding is significant: it challenges the assumption that certification necessarily adds cost, particularly when performance targets are embedded from the earliest stages of design. Retrofit premiums were higher and more variable, reflecting the inherent complexity of decarbonising existing building stock — including structural constraints, phased occupancy considerations, and the need to maintain service continuity during construction. For institutional owners managing aging portfolios, these retrofit challenges underscore the importance of long-term transition planning and phased capital investment strategies.

Operating savings ranged from 16 to 75 percent, with variation driven by building type, climate zone, and pre-retrofit baselines. For affordable housing operators funded by below-market rents, these savings translated directly into long-term operating affordability — reducing pressure on constrained operating budgets and freeing resources for programming, maintenance, and community services. In several cases, respondents noted that the operating savings were not merely beneficial but essential to sustaining the financial viability of the asset over its expected lifespan.

The decision to certify in the institutional sector was not shaped by exit-oriented returns, rent expectations, or capitalisation rate improvements. Instead, owners described a convergent set of drivers: long-term cost stability over hold periods measured in decades, mission alignment with organisational mandates around sustainability and community wellbeing, access to public and philanthropic funding that required or rewarded high performance, and a commitment to delivering resilient, healthy facilities for the communities they serve. Certification functioned as a funding enabler — aligning project proposals with eligibility criteria for programs such as the Federation of Canadian Municipalities' Green Municipal Fund and the Strategic Innovation Fund, unlocking capital that might not otherwise have been available.

The co-benefits reported in the institutional sample reinforced this long-horizon rationale. Occupant health and comfort, climate resilience, reduced maintenance burden, and alignment with institutional mandates and environmental, social, and governance commitments were not treated as secondary considerations — they were integral to the original decision framework. Respondents also highlighted the cross-referencing value between institutional and residential affordable housing contexts, noting that partnerships with organisations such as BC Housing are increasingly shaping how non-profit-led projects approach certification and performance standards.

The institutional evidence suggests that when ownership is long-term and mission-driven, the business case for certification is not primarily financial — it is strategic, operational, and fundamentally tied to the purpose of the asset.

| Metric | Range Observed | Evidence |
|---|---|---|
| Operating cost savings | 16-75% vs. code-minimum baseline | Projects 2-4 |
| Construction cost premium | 0-10% (new construction); higher for retrofits | Projects 1-5; Interviews 1-3 |
| Annual energy use savings | 15%-51.1% vs. code-compliant or conventional baseline design | Projects 1-4 |
| Payback period | 5-10 years (where reported)<br>Less than 5 years | Projects 4-5<br>Project 1 |
| Grant funding accessed | Up to $20M (federal); 15-25 sources per project | Projects 1, 3-4; Interview 2 |
| Mechanical room footprint | <3% vs. typical 9–10% of building area | Interview 1 |

**Research limitations:** Small sample (five projects and three interviews), self-reported data, and limited operational history for recently completed buildings. Two projects reported “TBD” for most operating metrics. These findings are directional, drawn from a geographically diverse but small sample, and should be interpreted as illustrative rather than statistically representative.

## Key Terms and Definitions

| | |
|---|---|
| Incremental Capital Cost (Green Premium) | The additional upfront construction cost attributable to achieving green certification, reported relative to each respondent's conventional code-minimum baseline. Excludes soft costs (certification fees, consultants, documentation) unless otherwise noted. |
| Operating Cost Savings | Reduction in annual building operating expenses (utilities, maintenance) relative to either the applicable building code baseline or the owner's own conventional (non-certified) project benchmarks, as reported by each respondent. |
| Code Baseline | The minimum energy performance requirements set by the applicable building code (e.g., National Energy Code of Canada for Buildings, Ontario Building Code) used as the reference point for reporting savings. |
| Net Operating Income (NOI) | Total property revenue minus operating expenses, before debt service and capital expenditures. |
| Cap Rate (Capitalization Rate) | A property's NOI divided by its market value; a lower cap rate implies higher asset value. Cap rate compression refers to a decrease in cap rate (i.e., an increase in implied value) associated with certified or higher-performing assets. |
| Rent Premium | Additional rent achievable above the comparable market rate, attributable to green certification or sustainability features. |
| Simple Payback Period | The time required for cumulative operating cost savings to equal the incremental capital investment, expressed in years. |
| Energy Use Intensity (EUI) | Total energy consumed per unit of floor area per year, typically expressed in kilowatt-hours per square meter (kWh/m²) or gigajoules per square meter (GJ/m²). Used to benchmark building performance independent of building size. |
| Thermal Energy Demand Intensity (TEDI) | The annual heating energy demand per unit of floor area (kWh/m²), reflecting envelope performance. A key metric in the ZCB Standards. |

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# 1 Introduction and Purpose

Green building certification is often evaluated through a narrowly defined financial lens, shaped by a persistent industry assumption that it carries a significant upfront cost premium. Growing concerns around increased capital costs, design complexity, and evolving regulatory requirements continue to influence decision-making and can act as barriers to broader uptake. As a result, the business case for green certification is frequently framed in terms of incremental costs, limiting how value is understood and assessed.

This research is part of an initial series that aims to move beyond hypothetical or modelled scenarios by presenting original primary findings drawn from survey responses and in-depth interviews with owners, operators, and developers of certified buildings of different asset types across Canada. The results offer direct insight into real-world experiences of delivering and operating certified assets, revealing how perceived cost premiums often differ from realized outcomes. The insights also uncover co-benefits associated with sustainability investments — such as improved occupant well-being, operational stability, market competitiveness, risk mitigation, and long-term asset performance — that are not consistently captured in conventional business cases.

Canada's institutional buildings, including post-secondary campuses, community centres, cultural facilities, and publicly owned infrastructure, occupy a unique position in the built environment. Unlike commercial real estate, institutional buildings are typically held indefinitely; funded through a complex mix of public grants, donations, and institutional borrowing; and measured against mission outcomes rather than investor returns. These characteristics fundamentally reshape the business case for green certification for these buildings.

Green building certifications, specifically Leadership in Energy and Environmental Design® or LEED® (Gold and Platinum) and the Canada Green Building Council™ (CAGBC) Zero Carbon Building – Design Standard™ and Zero Carbon Building – Performance Standard™ (ZCB-Standards), are increasingly adopted by Canadian institutions. For many, sustainability is embedded in strategic plans and institutional mandates, making certification less a question of "whether" and more a question of "how."

This research brief, jointly prepared by CAGBC and PricewaterhouseCoopers LLP (PwC), presents original primary research findings from five survey responses and three in-depth interviews with owners, operators, and developers of certified Canadian institutional buildings. The projects span British Columbia, and Ontario, and include post-secondary campus buildings, a community centre, and an anchor institution-led residential development. The purpose of the brief is to provide a concise, evidence-based synthesis of what green certification means for institutional building owners and to identify the sector-specific dynamics that differentiate the institutional business case from commercial asset classes. Considering the sample size, findings should be interpreted as directional and illustrative of emerging patterns rather than statistically representative of the broader institutional sector.

# 2 Methodology

This research brief is based on primary data collected through a national business case study, employing a mixed-methods approach. Primary data was collected through a structured online survey and semi-structured qualitative interviews, both conducted in early 2026. All responses are self-reported by building owners and developers.

The qualitative insights and contextual observations are drawn from both survey open-text responses and semi-structured interviews, along with a dedicated industry engagement session. The industry session involved a collaborative review of preliminary insights with 30 cross-sector experts (investors, owners, asset managers and finance professionals), to further ground the qualitative insights and contextual observations in broader market realities.

## Data Collection

The study targeted certified institutional buildings that were certified between 2015 and 2025 to LEED Gold or higher, and/or ZCB-Design or ZCB-Performance, across Canadian provinces. Survey data was aggregated to identify ranges and patterns. Interview data was coded thematically. All findings are derived directly from respondents; no data has been inferred or extrapolated. Interviews are references by number (Interview 1–3) and projects by coded identifiers (Project 1–5).

| Quantitative surveys | Qualitative interviews |
|---|---|
| Structured questionnaires capturing project details, certification level, capital costs, operating performance, financing, asset valuation metrics, occupant experience, and future-proofing strategies. | Semi-structured virtual interviews (~45–60 minutes each) with facilities directors, sustainability professionals, and institutional developers. Topics included decision drivers, financial feasibility, technologies, occupant experience, market context, and lessons learned. |

## Interview Participants

| Interviewee 1 | Interviewee 2 | Interviewee 3 |
|---|---|---|
| A facilities and sustainability leader at a mid-sized Ontario college, dual-certified (ZCB-Design and ZCB-Performance) zero-carbon building. Extensive experience with geothermal heat pumps, photovoltaics (PV), rainwater harvesting, and performance monitoring. Previously led facilities at a major Ontario university. | Executive leadership at an anchor institution-led development organization affiliated with a Western Canadian university, developing affordable and mixed-income housing. Experience with building-integrated photovoltaics (BIPV), solar thermal, passive design, and complex multi-source capital stacks. | A sustainability and built environment professional at a large Ontario college with multiple LEED and ZCB-certified buildings. Experience with passive house retrofits, ground-source heat pumps, building envelope commissioning, and institutional green building standards. |

## Sample Overview

| Project | City | Province | Certification | Ownership |
|---|---|---|---|---|
| Project 1 | — | British Columbia | LEED v4 BD+C + Energy Step Code 4 | Non-profit |
| Project 2 | Toronto | Ontario | LEED Gold NC 2009 | Non-profit |
| Project 3 | Hamilton | Ontario | ZCB-Design v2 + ZCB-Performance v2 | Non-profit |
| Project 4 | Oakville | Ontario | LEED Gold v4 BD+C | Public (Municipal Government) |
| Project 5 | Mississauga | Ontario | LEED Gold | Partnership |

**Project 1** is student housing in British Columbia, designed to Energy Step Code 4 and LEED v4 BD+C standards.

**Project 2** is a large mixed-use institutional complex, which includes student housing, in Toronto, with a total development cost of approximately $165 million.

**Project 3** is a post-secondary campus building in Hamilton, Ontario, with six consecutive years of performance certification as of 2025. The total project cost was approximately $50 million.

**Project 4** is a municipal community centre in Oakville, Ontario, completed in 2021.

**Project 5** is a recently completed institutional building in Mississauga, Ontario, for which most operating metrics are not yet available.

# 3 Financial Performance

## *3.1. Capital Costs and Construction Premiums*

The most notable finding from the institutional sample is the near consensus that construction cost premiums for green certification in new construction are minimal to zero, a claim supported by both survey data and all three interviews, though with important caveats about owner expertise and engagement.

| Project | Total Development Cost Premium ($) | Incremental Cost Premium (%) |
|---|---|---|
| Project 1 | ~$5M | 5% (Total) |
| Project 2 | Unknown; baseline never costed | Not reported |
| Project 3 | No capital cost difference reported | No capital cost difference reported |
| Project 4 | No comparative cost study | Not reported |
| Project 5 | Not reported | (Design: 5%; Construction: 10%; Commissioning: 3%) |

This finding challenges the common assumption that green certification entails a significant cost premium. When compared to the Altus Group Canadian Cost Guide for institutional construction, the ZCB-Design certified building (Project 3) showed no capital cost difference to achieve certification. The underlying mechanism is instructive: zero-carbon buildings require significantly smaller mechanical rooms, less than three percent of total building area compared to a typical nine to 10 percent for conventional institutional buildings, generating roughly $3 million in savings on a 9,290 m² (100,000-square-foot) building that offset the cost of efficient systems.

This finding is reinforced across the sample: the premium “can be very low if not zero” for new construction when a building envelope-first design philosophy is adopted, reducing mechanical and electrical system sizes. The key insight, however, is that the premium is not inherently low, it requires a knowledgeable and engaged owner who challenges conventional design assumptions. Mechanical engineers still size systems based on assumptions from 20 years ago and poor-quality envelopes; electrical engineers rely on outdated rules of thumb. When owners provide real operating data from existing buildings, design teams can reduce these over-conservative assumptions and bring system sizes down substantially.

Based on interviews, the picture for retrofits is different. Interviewees consistently noted that retrofit decarbonization involves a clear cost premium and is more complex — not only financially, but also practically — due to the need to decouple and redesign systems within existing building constraints. Across the interviews, participants reaffirmed a well-recognized industry reality: achieving net-zero outcomes through retrofits remains materially more challenging than in new construction. This reinforces the importance of institutional transition planning, where long-term capital planning can help manage the complexity and cost of decarbonizing existing building stock.

**Key Observation**

In institutional new construction, the green building premium can approach zero when an engaged owner challenges conventional design assumptions, invests in building envelope performance, and allows the resulting efficiency gains to reduce mechanical system sizes and footprint. This finding is consistent across all three interviews.

## *3.2. Operating Performance and Energy Savings*

Institutional buildings that have been operational long enough to report data show meaningful operating cost savings, though the range is wide and reflects the diversity of building types and vintages in the sample.

### Reported Operating Cost Savings

| Project | Savings ($/year) | Savings (% reduction/year) | Notes |
|---|---|---|---|
| Project 1 | ~$50k | 20% | — |
| Project 2 | $140k | 16% | — |
| Project 3 | Not reported | 75% | Six consecutive years of ZCB-Performance certification |
| Project 4 | Not reported | 55.1% | — |
| Project 5 | TBD | TBD | Recently completed |

Institutional buildings with sufficient operating history reported meaningful annual reductions in operating and energy costs, though outcomes varied widely across the sample. Reported savings ranged from 16-75 percent based on four surveyed projects, reflecting differences in building scale, certification ambition, design approach, and the extent of on-site renewable energy deployment.

The highest savings were associated with projects pursuing full zero-carbon pathways, combining high-performance envelopes, electrified mechanical systems, and on-site renewable generation. In these cases, institutions reported operating cost reductions of more than 50 percent and up to 75 percent, alongside materially lower maintenance requirements and sustained performance over multiple years. This evidence suggests that these savings are durable rather than one-time commissioning effects.

Lower but still material savings were observed in projects certified under standards that do not require full fossil fuel elimination, with reported reductions in the range of 16 percent to approximately 55 percent. These outcomes indicate that incremental efficiency measures can deliver measurable operating cost benefits, but that the magnitude of savings increases substantially when buildings are designed to eliminate fossil fuel dependence and rely on integrated zero carbon strategies.

In affordable and non-market housing contexts (developed by an institution), the operating savings mechanism differs from commercial models. Rather than capturing value through rent premiums, institutions maintain market-equivalent rents and realize financial benefit through reduced utility expenses.

Overall, operating performance improvements represent one of the most consistent and tangible financial outcomes of certification in institutional buildings. While the scale of savings varies by design pathway and building type, the underlying mechanisms, reduced energy consumption, lower utility exposure, and simpler system maintenance, aligns closely with institutional priorities of long-term cost stability and financial resilience.

## Annual Energy Use

| Project | Annual Energy Use (kWh/year) | Annual Energy Use savings (%) | Notes |
|---|---|---|---|
| Project 1 | ~1.2M | 15% | — |
| Project 2 | ~6.3M | Not reported | Largest building in sample |
| Project 3 | ~537,000 | 37% | Produces surplus renewable energy |
| Project 4 | ~1M | 51.1% | — |
| Project 5 | Not tracked | Not reported | Recently completed |

Across the institutional sample, Annual Energy Use Savings outcomes varied significantly in absolute terms, driven by differences in building size, function, and use intensity. More meaningful than total energy use, however, is the magnitude of EUI reduction achieved through design choices. Projects pursuing full zero-carbon pathways reported EUI reductions in the range of approximately 15 percent to over 51.1 percent, with performance sustained over multiple years of operation, and one project reported producing surplus renewable energy annually. Taken together with the envelope-first/right-sizing approach, the findings suggest that the largest performance gains are associated with reducing loads and simplifying systems rather than relying solely on operational tuning.

## Water Conservation

Water efficiency emerged as a meaningful but underreported co-benefit of green building certification in the institutional sample. The most detailed evidence comes from one project, which incorporates a rainwater harvesting system that supplies all toilet flushing throughout the building, reducing water consumption to drinking and hand-washing only, a significant reduction for a high-traffic post-secondary facility. The system has operated successfully for approximately eight years, demonstrating long-term reliability, though it required dedicated software controls and integration with the campus's central building management platform, adding an initial layer of operational complexity and staff training that respondents described as manageable but non-trivial. Elsewhere in the sample, stormwater management measures including green roofs and site-level drainage strategies were referenced as standard components of LEED certification, contributing to both environmental performance and building resilience.

Taken together, the evidence suggests that water efficiency is an achievable and durable co-benefit of high-performance institutional buildings, particularly where rainwater harvesting or integrated stormwater strategies are embedded early in design, but that the sector lacks the measurement infrastructure to quantify these benefits with the same rigour applied to energy performance. This water measurement gap parallels the energy data tracking gap identified elsewhere in this brief: where performance is not systematically measured, it cannot be benchmarked, compared, or used to build a credible business case suggesting that standardized water reporting requirements, comparable to those increasingly applied to energy, should be considered alongside energy metrics in future certification and reporting frameworks.

**Key Observation**

Operating cost savings of 16–75 percent are observed across the institutional sample, with the highest savings achieved by the zero-carbon building that has sustained ZCB-Performance certification for six consecutive years. In the institutional context, these savings compound over indefinite hold periods and can translate directly into additional financing or borrowing capacity.

## *3.3. Asset Valuation and Market Perception*

The institutional asset class presents a fundamentally different valuation dynamic than other commercial real estate. Most institutional buildings are owner-occupied, held indefinitely, and not subject to market sale — meaning that conventional valuation metrics such as cap rates, rent premiums, and sale price impacts are either inapplicable or unmeasured.

| Project | Rent Premium | Cap Rate Impact | Appraisal Uplift | Payback Period |
|---|---|---|---|---|
| Project 1 | Not reported | Not reported | Not reported | Less than 5 years |
| Project 2 | Increased | Not reported | Not reported | Unknown/Not calculated |
| Project 3 | Increased | Not reported | Not reported | Unknown/Not calculated |
| Project 4 | Not reported | Not reported | 5-10% | 5-10 years (varies by project) |
| Project 5 | Increased | Not reported | Not reported | 5-10 years |

Across the institutional sample, increases in NOI and appraised values were reported where measured, but these metrics carry a different meaning than in market-driven asset classes. Interview evidence consistently emphasized that traditional ROI calculations are often secondary in institutional contexts, where projects are funded through a mix of grants, public funding, and long-term capital programs. As a result, isolating a conventional return attributable to certification is neither straightforward nor always relevant.

Instead, the financial value of green building certification in institutional settings is primarily realized through operating cost stability and expense reduction over long time horizons. Respondents repeatedly noted that certification decisions are not driven by near-term financial feasibility or asset price appreciation, but by the ability to deliver core educational, community, or social objectives while maintaining predictable and sustainable operating costs over decades.

This expense-driven value proposition was particularly evident in affordable and non-market housing contexts, where institutions operate at market-equivalent rents and generate financial capacity through reduced utility and operating costs rather than revenue growth. In these cases, lower operating expenses can support higher debt service capacity and reduce equity requirements, representing a fundamentally different financial mechanism than the rent-premium or valuation-uplift model observed in commercial real estate.

The findings also suggest that institutional assets with partial commercial characteristics may experience different outcomes. Where buildings include leasing components or market-facing uses, certification can contribute to measurable rent or value uplift, indicating that financial impacts within the institutional sector vary based on the extent to which assets participate in market dynamics.

**Key Observation**

Conventional valuation metrics (cap rates, rent premiums) are largely inapplicable to the institutional sector, where buildings are held indefinitely and success is measured against mission outcomes. The financial value of certification flows primarily through operating cost reduction and enhanced financing capacity, not through asset price appreciation.

## *3.4. Financing, Incentives and Insurance*

Grant funding and public subsidies play a more central role in institutional green building than in any other asset class — particularly for colleges, which face more constraints on borrowing than universities or private developers.

| Project | Incentives Accessed | Notes |
|---|---|---|
| Project 1 | Wood grant | — |
| Project 2 | No | — |
| Project 3 | Federal Strategic Innovation Fund (SIF): $20M; Private Foundation: $5M; other private donations | Provincial loan guarantee |
| Project 4 | Federal government: ~$1M | — |
| Project 5 | No | — |

Across the institutional sample, green building certification frequently functioned as a funding enabler rather than a cost premium. Respondents described capital stacks characterized by a high degree of complexity, often involving numerous public, quasi-public, and private funding sources. In these contexts, zero carbon ambition was not treated as an optional enhancement, but as a strategic differentiator that strengthened funding applications and unlocked access to otherwise unavailable capital.

Institutional projects commonly rely on multi-layered capital structures, drawing from a combination of federal and provincial infrastructure programs, municipal and utility incentives, sector-specific funds, philanthropic contributions, and debt supported by public guarantees. Interview evidence suggests that sustainability commitments are increasingly embedded within the eligibility criteria or scoring frameworks of these programs, meaning that the absence of a strong green building narrative can materially weaken a project's funding prospects.

However, access to green funding is not uniform across institutional owners or regions. Some respondents reported receiving no grants or subsidies specifically tied to zero-carbon or green building features, instead accessing broader infrastructure funding where sustainability was one of several evaluation criteria. Awareness of programs explicitly incentivizing zero-carbon new construction remains uneven, indicating an information and capacity gap rather than a lack of available mechanisms.

By contrast, insurance markets have not yet recognized green certification as a risk-pricing variable. While insurance costs were reported to be rising sharply due to climate-related physical risks, no respondent identified reduced premiums attributable to certification. This highlights a disconnect between where climate risk is manifesting financially and where incentives for mitigation currently exist. Respondents noted that insurers continue to price risk at the portfolio or regional level, suggesting that any linkage between certification and insurance outcomes remains prospective rather than current.  For insurers, risk reduction is driven by site selection and addressing hazards like wildfire and flood. Building resiliency measures (e.g., for flood, wind, smoke), increasingly recognized in certifications like LEED v5, further support risk mitigation. Together, site choice and resiliency strategies are key ways to demonstrate certification value to the insurance industry.

### Key Observation

In the institutional sector, green building certification is not a cost burden — it is a funding enabler. The zero carbon mandate differentiates grant applications, unlocks sustainability-specific funding streams, and strengthens the case for public investment. Institutions that approach the capital stack creatively can leverage certification to assemble more robust financing. (Projects 1–5; Interviews 1–3).

# 4 Technology and Innovation

The institutional sector demonstrates a pragmatic approach to technology: proven systems deployed thoughtfully, with the building envelope and not equipment as the primary performance driver.

| Project | Technology | Context |
|---|---|---|
| Project 1 | Solar PV, mass-timber construction, heat pumps ($CO_2$ refrigerant) | Energy Step Code 4 |
| Project 2 | Geothermal, smart sensors/Internet of Things (IoT), AI building management | Large-scale campus building |
| Project 3 | Solar PV (~2,000 panels), geothermal (28 wells), rainwater harvesting, solar thermal | — |
| Project 4 | Solar PV, geothermal, smart sensors/IoT | Community centre |
| Project 5 | Solar PV, geothermal, AI building management, smart sensors/IoT | Recently completed |

## Building Envelope as Primary Strategy

Building envelope strategies emerged as the primary decarbonization lever across the institutional sample. Respondents consistently described a “fabric-first” design philosophy: prioritize high-performance envelopes to reduce heating and cooling loads, then downsize mechanical systems and install simpler, more robust equipment. This approach places emphasis on thermal bridge elimination, airtightness testing, and high-performance glazing. Interview evidence indicates that ultra high-performance standards, including high-quality envelopes, are achievable even in retrofit contexts, with envelope improvements enabling substantial simplification of downstream mechanical systems. Limited domestic supply of certified components remains a constraint, with some projects sourcing specialized windows from international manufacturers.

## Geothermal Systems as a Reliability and Durability Strategy

Geothermal (geo-exchange) systems were reported as a reliable, low-maintenance long-term solution for institutional buildings. Where deployed, these systems were characterized by operational stability, minimal maintenance requirements, and long asset lives measured in decades. Interview respondents emphasized that, once installed, geothermal systems require limited intervention beyond periodic monitoring, supporting their suitability for institutions with long ownership horizons and constrained facilities resources. The institutional ownership model, with indefinite hold periods and long-term cost stability as a core priority, may be particularly well-suited to geo-exchange systems where high upfront capital is offset by decades of low-maintenance operation.

## Photovoltaics (PV) as a Scalable Energy Offset and Future-Proofing Tool

Photovoltaic systems demonstrated both current value and significant future-proofing potential. Respondents noted that rapid improvements in panel efficiency materially change the economics of installed systems over time. Buildings with existing PV infrastructure including racking and electrical connections are well positioned to benefit from future panel upgrades without major reinvestment, allowing institutions to incrementally increase on-site generation as technology advances.

## Solar Thermal as a Targeted, High-Return Efficiency Measure

Solar thermal systems emerged as an underutilized but highly cost-effective technology in buildings with significant domestic hot water demand. Interview evidence highlighted cases where relatively modest investments in solar thermal eliminated the need for larger mechanical equipment, delivering net capital savings alongside meaningful energy reductions. In comparative terms, solar thermal was described as delivering substantially higher energy displacement per dollar invested than some PV applications, leading respondents to reassess technology sequencing in subsequent projects.

## District Energy as an Operational Centralization and Resilience Strategy

District energy systems were identified as a resilience advantage for large institutional campuses. Centralized heating and cooling networks benefit from redundancy, diversified equipment sources, and looped distribution configurations that allow systems to continue operating during localized failures. Interview respondents emphasized that these characteristics enhance operational resilience and simplify long-term system management, particularly for institutions managing multiple buildings within a single campus.

### Key Observation

The institutional sector's most effective technology strategy prioritizes fundamentals over complexity. Rather than deploying the most advanced mechanical systems, leading projects invest first in high-performance building envelopes to reduce loads, then select proven, simple technologies that are easy to operate and maintain over long life cycles. Within this approach, solar thermal emerged as a notably underutilized solution, offering strong cost-effectiveness where domestic hot water demand is substantial.

# 5 Co-Benefits and Tenant Experience

In the institutional sector, the co-benefits of green building certification extend well beyond financial performance and are closely tied to reputation, occupant well-being, and institutional mission. Because these buildings serve diverse populations, including students, staff, visitors, and community members, the value of certification is experienced across multiple dimensions that are not easily captured in conventional financial metrics.

Reputational value emerged as the most consistently cited co-benefit across the sample. Respondents described certification as a visible demonstration of institutional commitment to sustainability, reinforcing credibility with stakeholders and aligning with stated ESG and climate objectives. Interview and survey evidence suggest that, in institutional contexts, certification serves both as a positive signal and as risk mitigation: failing to pursue certification may carry a reputational downside as stakeholder expectations around sustainability continue to rise.

## Occupant Experience

Benefits were widely reported, particularly regarding indoor air quality and thermal comfort. Certified buildings were described as delivering more consistent ventilation, fewer comfort complaints, and improved perceived building quality compared to conventional facilities. While evidence was largely anecdotal rather than systematically measured, respondents consistently reported positive feedback from occupants, suggesting that performance-driven design translates into tangible experiential benefits.

## Educational Mission Alignment

Certification also supports institutional missions related to education and public engagement. Several respondents highlighted the role of certified buildings as a learning infrastructure, where building systems, energy performance, and sustainability features are intentionally made visible and accessible. In these cases, buildings serve as teaching tools and demonstration projects, supporting curriculum, research, and outreach activities alongside their core functions.

## Occupant Awareness

A candid counterpoint emerged from the affordable housing context: tenants generally do not choose buildings based on sustainability features. Occupant awareness and decision-making vary by use and population. Demand is driven primarily by affordability and quality, with sustainability benefits experienced indirectly through better-maintained spaces, improved comfort, and reduced stigma rather than explicit recognition of certification.

**Key Observation**

In the institutional sector, the co-benefits of green building certification are primarily reputational and mission-aligned rather than market-driven. Certification reinforces institutional values, supports educational and community objectives, and improves occupant comfort and building quality. While these benefits are meaningful, occupants do not generally choose institutional spaces solely based on sustainability certification.

# 6 Futureproofing and Resilience

Institutional buildings are typically planned and operated over multi generational time horizons — often 50 to 100 years — making resilience and future proofing core design requirements rather than optional enhancements. Across the sample, respondents emphasized that long term durability, adaptability, and operational stability are central to the institutional value proposition.

**High performance building envelopes emerged as the foundation of long-term resilience.** Interview evidence highlighted that investments in airtightness, robust roof assemblies, and durable envelope components materially reduce long term deterioration and performance risk. Buildings designed to ultra high performance standards were described by interviewees as aging more slowly than conventional construction, with fewer envelope related failures and stronger long term building condition outcomes.

Mechanical and energy systems were viewed through a life cycle lens rather than short replacement cycles. Respondents described renewable and low-carbon systems — including geothermal, heat pumps, and on-site renewables — as long-lived assets with relatively low maintenance requirements and predictable replacement timelines measured in decades. Importantly, future replacement was framed as an opportunity rather than a risk, as advancing technology is expected to deliver higher efficiency at lower cost over time.

Several institutions have embedded resilience directly into internal design standards. These approaches include mandating high-performance or passive-pathway requirements for new construction, designing buildings to maintain habitable conditions during power outages solely through thermal mass, and incorporating physical resilience measures such as elevated electrical infrastructure, non-basement mechanical rooms, enhanced stormwater management, and green roofs.

Climate-related risk is increasingly evident through insurance and utility cost pressures, driven by increasingly frequent and intense extreme weather events. While certification has not yet translated into reduced insurance premiums, respondents noted sharply rising insurance costs in climate-exposed regions, reinforcing the financial relevance of resilience investments. At the same time, rising utility rates strengthen the case for on-site renewable energy and infrastructure that can be upgraded incrementally over time.

Digital performance monitoring is emerging as a future-proofing tool. Institutions reported growing use of digital twins and long-term performance observatories to track, model, and improve building performance over time, supporting adaptive management across extended ownership periods.

## Key Observation

The institutional sector's long holding periods fundamentally change the resilience calculus. Investments in high-performance envelopes, durable mechanical systems, renewable energy infrastructure, and digital performance monitoring compound in value over 50-100-year horizons — a markedly different equation from the shorter investment cycles typical of commercial real estate.

# 7 Challenges and Lessons Learned

## Value Engineering Pressure

When project budgets tighten, value engineering processes tend to target envelope performance and higher-quality components as the easiest sources of cost reduction. Respondents noted that this approach can undermine both long-term performance and eligibility for sustainability-linked funding and incentives. Institutional owners that successfully delivered high-performance outcomes were those that held firm on environmental targets during value engineering and redirected cost reductions toward non-performance-critical elements rather than compromising envelope or system efficiency.

## Design Team Conservatism

Across the sample, mechanical and electrical systems were frequently described as being oversized based on conservative assumptions and outdated rules of thumb. Respondents identified owner-led intervention as a critical corrective, particularly through the use of real operating data from existing buildings, explicit performance targets, and integrated design processes that require collaboration across disciplines from the outset. Challenging default assumptions was cited as one of the most effective ways to control costs without sacrificing performance.

## Controls and Commissioning

Certification alone was consistently described as insufficient to deliver actual performance. Respondents emphasized that building automation systems are often programmed to achieve basic occupant comfort rather than optimized efficiency, leaving significant performance potential unrealized. Sustained commissioning, control tuning, and active performance optimization — particularly during the first one to two years of operation — were identified as essential to achieving the intended zero-carbon outcomes.

## Staff Turnover and Knowledge Loss, and the Role of Operating Governance

Institutional projects face heightened vulnerability to knowledge loss due to staff turnover, budget-driven restructuring, and role changes. Buildings with specialized performance-monitoring and reporting requirements were particularly exposed when key personnel left. Respondents noted that reliance on individual champions creates risk unless performance responsibilities, documentation, and monitoring processes are institutionalized rather than person-dependent. Where governance mechanisms were clearly defined — including standardized procedures, role clarity, and continuity planning — operational performance proved more resilient to personnel changes.

## Supply and Sourcing

Experience across projects highlighted the importance of supply-chain learning over time. Respondents noted that cost, availability, and maintainability can vary significantly by manufacturer and geography, and that locally sourced components often offer advantages in both capital cost and replacement timelines. This institutional knowledge was described as cumulative and increasingly valuable as organizations progressed through multiple projects.

## Certification Timing and Cost

Respondents observed that certification difficulty and cost are dynamic rather than static. As building codes evolve, requirements that were once considered above-code gradually become standard practice, narrowing the incremental effort required to achieve certification. This shifting baseline reinforces the advantage of early adoption, while also highlighting that certification frameworks will continue to evolve to maintain differentiation.

### Key Observation

Across the institutional sample, the single most critical success factor was the presence of a driven owner. The technologies are proven, cost premiums can be managed, and operating savings are achievable — but realizing these outcomes depends on owner-side leadership to challenge conservative design assumptions, protect performance during value engineering, and actively manage buildings after occupancy.

# 8 Actionable Insights for Residential Owners, Developers, and Policymakers

| | |
|---|---|
| **Insight 1**<br>**Invest in Building Envelope First** | The highest-impact design decision for institutional buildings is a high-performance building envelope. Across the sample, envelope investment consistently delivered multiple benefits: reduced heating and cooling loads, smaller mechanical system sizing, lower operating costs, improved occupant comfort, and enhanced long-term resilience. This fabric-first approach enables simpler, more durable mechanical systems and provides a stable performance foundation over multi-decade life cycles. Ultra-high-performance standards, including passive-level envelopes, demonstrate the upper bound of what is achievable — even in retrofit contexts — when envelope performance is prioritized early. |
| **Insight 2**<br>**Challenge Design Assumptions with Real Data** | Mechanical and electrical systems are often oversized based on generalized benchmarks rather than actual operating conditions. Institutions that leverage real performance data from existing buildings — including loads, schedules, and occupancy patterns — can right-size systems, eliminate excess capacity, and avoid avoidable cost premiums. Owner-led insistence on data-driven design and integrated, cross-disciplinary collaboration emerged as a critical enabler of both cost control and performance outcomes. |
| **Insight 3**<br>**Use Certification to Unlock Funding** | In the institutional sector, green building certification is a competitive differentiator for grant applications and public funding programs. A zero-carbon commitment can open access to sustainability-specific funding streams (FCM Green Municipal Fund, certain CMHC programs, Efficiency Manitoba, etc.) that would not be available for conventional buildings. |
| **Insight 4**<br>**Build for 50–100 Years, not 5–10** | Design decisions that may appear cost-intensive on a short-term basis — durable envelopes, long-life mechanical infrastructure, and renewable energy systems — compound in value over decades. Importantly, technology evolution strengthens this case: infrastructure installed today (e.g., geothermal fields, electrical capacity, PV racking, distribution systems) will support more efficient, lower-cost replacements in the future. Future-proofing, therefore, depends less on predicting specific technologies and more on creating flexible, durable platforms that can accommodate improvement over time. |

### Insight 5

**Invest in Post-Occupancy Commissioning and Operational Workforce Capacity**

Project certification establishes a rigorous, verified foundation for high-performance building outcomes. To fully realize this value, institutional owners emphasize that continuous commissioning and asset sub-metering are vital. Rather than treating certification as a static milestone, integrating it with proactive operations ensures the asset consistently delivers its designed energy savings and risk mitigation over time. Government funding programs can amplify these results by attaching operational training and commissioning requirements to verified certification pathways, ensuring design excellence translates into sustained real-world performance.

### Insight 6

**Simplify and Stabilize Public Funding Pathways for Institutional Green Buildings**

Institutional green buildings rely heavily on public funding. Governments may wish to consider consolidating or streamlining sustainability-linked funding pathways for institutional buildings, with longer program windows and more predictable eligibility criteria, so that institutions can plan multi-year capital programs with greater confidence.

# Appendix: Limitations

| Limitation | Description |
|---|---|
| Sample size | Five surveys and three interviews — meaningful but not statistically representative. |
| Geographic concentration | Projects span British Columbia, and Ontario, but three of five survey respondents are concentrated in the Greater Toronto and Hamilton Area. |
| Building type diversity | The sample includes post-secondary campus buildings, a community centre, and student housing. These building types have different operating profiles and funding structures. |
| Self reported data | All quantitative data is self-reported and has not been independently verified. |
| Comparability | Energy data is reported in different units and is not normalized for building size, occupancy, or climate zone. |
| Institutional context | Many conventional commercial metrics (cap rates, rent premiums, Internal Rate of Return (IRR)) are inapplicable to institutional buildings, limiting cross-sector comparisons. |
| Standardized performance measurement | The findings underscore a broader need for standardized performance measurement and reporting in the institutional sector. Consistent tracking of energy, water, and operating cost data — supported by dedicated staff and sub-metering infrastructure — would strengthen the evidence base for future business case assessments and enable more robust benchmarking across certified buildings. |
| Operational maturity | Several projects (Projects 4, 5) have recently been completed with limited operating history. Interview 2 acknowledged: “It’s probably too soon on the zero carbon buildings because we’ve just opened our first zero carbon buildings basically this year.” |

Despite these limitations, this study provides valuable primary evidence on the institutional business case for green certification in Canada — a sector in which mission alignment, long-term ownership, and public funding create a fundamentally different context from commercial real estate. CAGBC will build upon these initial findings in the next phase of this initiative. The 2027 research phase will expand the institutional evidence base by targeting broader datasets and longitudinal operational performance, ensuring mission driven owners have the robust data needed for long term capital planning.

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