



Introducing the:

Prefab Buildings Initiative

June 2024

Objective:

Apply the combined expertise of our design, development and technology partners to advance opportunities in precision manufacturing and construction optimization.

Table of Contents

- 4. Executive Summary
- 5. Section 1: Business Case
- 8. Section 2: Proposed Structure, Targets & Timelines
- 13. Section 3: Adopting Building Innovation
- 19. Appendix:



The PBI
will deliver
industry-led
results to
the market
through 3
tiers of
development.



Executive Summary

Tier 1. Engagement – The Prefab Buildings Roundtable

Introduce leadership in advanced manufacturing, sustainable design, and technology innovation to the property development industry across Canada.

Tier 2. Development – Prefab Building Design & Construction

Design/finance/build prefabricated building projects targeting the latest innovations in mass timber, zero carbon, cleantech & healthy living standards.

Tier 3. Results – Market-wide Adoption of Prefab Building Systems

Establish a protocol for knowledge sharing resulting from manufacturing, technology testing, building construction, and performance monitoring.

Each of the above three Tiers have been structured to work together as a systematic process. Each Tier will focus on specific needs in the market. Funding will be provided by partner agencies in Canada, matched by industry capital contributions. Lessons learned will be shared across the market to lead a transformation of the construction sector.

Section One

Business Case

- At Issue
- Opportunity

At Issue

The housing crisis in Canada presents a unique set of challenges within the construction sector. Despite robust demand for housing, developers face significant barriers hindering new construction. Economic conditions in the market pose a real challenge in this investment landscape, constraining project viability. Developers and investors alike are concerned about the sustainability of traditional construction methods amidst rising material and labour expenses.

As a result, the gap between housing supply and demand continues to widen, exacerbating affordability concerns and perpetuating the housing crisis across Canada. Addressing these barriers requires collaborative efforts between policymakers, developers, and product suppliers to streamline regulations, incentivize construction, and foster innovation in the building and construction market.



Opportunity

Prefabricated buildings present a promising solution to Canada's housing shortage. Prefabrication offers numerous advantages, including reduced construction time, minimized on-site labour requirements, and improved cost-effectiveness. By leveraging prefabricated components such as building envelopes, interiors, mass timber structures, and mechanical systems, developers can streamline the construction process and accelerate the delivery of much-needed housing units. Moreover, prefabrication allows for greater efficiency in utilizing resources and can mitigate the impact of escalating construction costs. With the ability to deliver turnkey solutions in a timely and cost-effective manner, prefabricated mixed-use residential buildings have the potential to significantly contribute to addressing the demand for more housing, while meeting the diverse needs of our growing communities.

Building Prefabrication Defined

Building prefabrication is the process of manufacturing building components off-site in a controlled factory environment, then transporting them to the construction site for rapid assembly.



Section Two

Proposed Structure, Targets & Timelines

- PBI Program Objectives
- 3 Tier Development Process



PBI Program Objectives

The Prefab Buildings Initiative (PBI) will establish a collaborative strategy with component manufacturers. Our goal is to maintain consistency in our PBI affiliations for project efficiencies and superior product performance.

PBI Affiliates will work together to:

- Identify the latest innovations in manufacturing for project integration resulting in projects that are 80–90% factory built.
- Design a collection of replicable multi-unit housing models
- Establish property development and joint venture opportunities for construction applications
- Review production processes for project efficiencies and replication, including material and cost savings
- Create an efficient scheduling process to coordinate on-sight assembly
- Conduct evaluation and testing procedures for continued build efficiencies, cost and resources savings, and quality assurance
- Develop a strategy for market awareness, communications, and report publications.

PBI Development Process

The PBI will implement a 3-tiered system to facilitate efficient program development and pilot project delivery, ensuring collaboration across industry expertise, robust design and development, and rigorous testing and verification.

Tier 1: Industry Expert Roundtable

PBI affiliates and public sector leaders will provide critical insights and guidance in delivering the Prefab Building Initiative over the course of project development.

Tier 2: Building Design & Development

Designers, engineers, and suppliers will work together on detailed building designs, transforming the framework established through the Roundtable into constructible pilot projects.

Tier 3: Research for Market Adoption

The process of constructing prefabricated buildings and the integration of technologies will go through rigorous testing and verification to ensure solutions are reliable, effective, and ready for real-world application.

Tier 1

Engagement:

The Prefab Buildings Roundtable

Collaborative Leadership

The **PBI Roundtable** has been formed to bring together a select group of leading manufacturers, designers, engineers and public sector leaders. Together we will:

- Create a comprehensive, ready-to-implement strategy for precision manufacturing & on-site assembly
- Introduce solutions to address Canada's housing challenges
- Identify resources required for project design & construction.

Projected Outcomes by Year:

Year 1

- 1 Launch Event
- 1 Design Charrette
- 2 Meetings (*in-person*)
- 4 In-Camera Sessions
- Completed Designs
- Market Dev. Plan

Year 2

- Project Construction
- 1 Meeting (*in-person*)
- 4 In-camera Sessions
- Progress Report Publication
- Investor Relations Strategy
- Tech Testing & Verification

Year 3

- Business Development Plan
- 1 Meeting (*in-person*)
- 4 In-camera Sessions
- Project Performance Monitoring
- Replication Strategy Beyond Pilots

Participating
Suppliers & Manufacturers



Additional corporate participants will be added as needed in response to market interest and project needs.

NRCan's Green Construction through Wood (GCWood) program promotes and invests in innovative wood-based building systems.



Funding Request

PBI will apply for funding to NRCan's GCWood program to support overhead, business development and project design. Funding will be matched by industry contributions to fulfill a total 3-year budget target.



Tier 2

Development:

Prefab Building Design & Development



3 building types will be explored for replication.

Our PBI objective is to work with our suppliers to produce 80–90% of projects in factory through precision manufacturing.

Sept 2024

Funding secured through public sector agencies to begin design work and community engagement.

March 2025

Designs are completed, project partners, investors are engaged to match public funds, and property for first pilot project is identified and secured. Refer to the PBI “essential services building strategy” as one potential use of this building – to benefit the families of the professionals that keep our city safe and operating.

October 2025

1st Building reaches substantial completion – preparing for families to move in. PBI development team will work closely with the city and suppliers to ensure process runs efficiently, meets timelines, and budget targets.



Multi-unit Residential



4-6 plex – multiple on a site to make up a community



Mixed-use Infill

Participating Designers, Engineers & contractors



Additional corporate participants will be added as needed in response to market interest and project needs.

NGen’s mandate is to invest up to \$35 million into collaborative, industry-led, sustainable manufacturing projects.

www.ngen.ca



Funding Request

PBI will assist suppliers with applications for funding to NGen’s “Sustainable Manufacturing Challenge” to support production and project development. Funding will be matched by owner/investor contributions to fulfill a total project budget.

Tier 3

Results:

Market-wide Adoption of Prefab Building Systems

Research, Testing & Verification

By testing and monitoring the integration of new materials, systems, and technologies into prefabricated buildings, we will be able to streamline assembly methods, improve efficiencies, reduce construction times, and lower environmental impacts.

Reporting, Publications & Market Outreach

Reporting and market outreach are vital in transforming the construction industry through innovative solutions like prefabricated components through precision manufacturing. Historically, the construction sector has been one of the last to adapt to changing market conditions, often lagging in the adoption of new technologies and processes. By effectively communicating the benefits and successes of prefabrication through detailed reporting and targeted outreach, we can educate stakeholders, build industry confidence, and drive wider acceptance. This proactive approach helps to showcase the efficiency, cost-effectiveness, and sustainability of prefabricated systems, accelerating their integration into mainstream construction practices and catalyzing a much-needed evolution within the industry.

Year 1

- Establish a 3-year research plan
- Monitor the design process
- create a website for live streaming
- Publish report on the manufactures, technologies and project teams

Year 2

- Publish a lessons-learned report on the PBI prefab development process
- Monitor building performance for system efficiencies
- Prepare for 1st pilot project replication and the next PBI building type.

Year 3

- Demonstrate scope of benefits of prefab
- Develop a market-wide engagement strategy to promote opportunities.
- Build prefab buildings in region across Canada, report on challenges of national strategy.

Participating Research,
Marketing & Communications



ace
Project
Marketing
Group



actualmedia



OKANAGAN

Additional Corporate participants will be added as needed in response to market interest and project needs.

Up to \$27 million in grant and contribution funding is available each year to help businesses and academia work with the NRC to foster new technology and research ideas.



Funding Request

PBI will apply for funding to the National Research Council Canada to support technology testing, verification and reporting. Funding will be matched by sponsorship contributions to fulfill a total project budget.



Section Three

Adopting Building Innovation

- Strategy for Precision Manufacturing
- Mass Timber
- Advanced Performance
- Mindful Buildings Framework

Strategy for Precision Manufacturing and On-site Assembly

Through the administrative leadership of the PBI, our goal is to work collaboratively with Cetana, our manufacturers, designers, and engineers to deliver 80–90% of project construction through factory-built components, and then share results across the construction sector.

Next Generation Prefabrication:

Traditionally, prefabricated buildings have been constructed in centralized factories, producing all components under one roof, managed by a single company. This centralized production process has worked well for single-family home builders, but now the market demands the next generation of prefabrication – across multiple building types – to meet our national housing challenges.

We propose a new strategy where a coalition of manufacturers, each focused on their specific building components, work together with Cetana to create turn-key building solutions for property developers to adopt nation-wide.



Prefabricated Building Components:

A review of systems and technologies proposed for PBI pilot integration. Additional systems will be introduced over the course of development.

- Lean Construction
- Rapid Assembly
- Lower Costs
- Quality Assurance



HVAC Systems



Planting Systems



Panelized Exterior Facades



Interior Fixtures & Finishes



Smart Building IT



Structural Mass Timber



Water Management



Mass Timber

Experience and Expertise

Mass timber refers to a category of large-scale, engineered wood products that are used as structural elements in building construction.

Executives in the PBI are experienced leaders in constructing with the wood products and mass timber in Canada.

“Recognized as the latest innovation in ICI and multi-unit residential construction, we are confident in the economic, environmental and human health benefits of mass timber. As such, Cetana Group is committed to using structural mass timber for every project possible.”

Andrew Bowerbank
CEO, Cetana Group



Advanced Performance

Sustainable, healthy, resilient

Our buildings and infrastructure must adapt to meet the energy and environmental challenges of today and into the future.

Executives participating in the PBI have decades of experience delivering market leading, green buildings. From LEED certification, to Net Zero Energy, to Zero Carbon, we have the knowledge and network required to transform our communities.

“Sustainable buildings do not cost more or require untrusted technologies to meet performance targets. It just takes a commitment to change the way we design and construct. We must adopt a holistic, open collaboration with project teams to achieve our goals.”

Kenny Smith
CEO, Firm6

Mindful Buildings Framework

[Coming Soon]

"Incorporating biophilic design and human health considerations into building design fosters a connection with nature, enhancing occupants' well-being and productivity. This approach not only improves mental and physical health but also creates more sustainable and resilient living environments."

*Lindsay Cox,
Director, SE Health*

Objective:

The Mindful Buildings Framework recognizes the pivotal role that buildings play in shaping the well-being of individuals and communities. Mindful buildings will prioritize the physical and mental health of occupants, fostering spaces that promote positive interactions and social cohesion.

Ultimately, the Mindful Buildings Framework will strive to create environments that not only meet the functional needs of occupants but also elevate their quality of life and sense of belonging to the community.

Process:

Cetana has partnered with **SE Health** to develop the Mindful Buildings Framework. Respected leaders from across sectors and interest groups will be engaged work with us in this process.

PBI members and associates, will be engaged to participate in the Framework's development, apply it to the design of our prefab projects, and then help share across the market.

Appendix

A Review of Resources

- PBI Admin & Leadership
- Pilot Project through the City of Kelowna
- Cetana Group: A Founding Member of the PBI
- Real Estate Investment Trust
- Andrew Bowerbank Bio

2024 PBI Administration & Leadership

PBI Administration

As of the date of inception, the objective of the PBI is to facilitate the rapid design & development of prefabricated building projects. The PBI has been formally registered as a NFP industry association in Canada. Our commitment will be to keep overhead costs as low as possible by relying on the resources of our associate members. The PBI executive & administration team will work with government agencies and sponsors to secure funding needed for operations, events, research, publications, etc.

Transparency Statement – Property Development

Cetana Group (a property development company, established in 2021 –see appendix) has been recognized as a founding member of the PBI, and Cetana's CEO has been appointed the Managing Director of the PBI.

We encourage other interested developers to work with us in collaboration. We will be open and transparent in our efforts to design/build prefabricated building projects. When project opportunities arise, an open call will be announced for property developers to work with PBI affiliates and Cetana Group to ensure project success.



2024 PBI Administration & Leadership

Private Sector Affiliates

Our goal is to maintain consistency in our partnerships for property development efficiencies and superior product performance. Together, we will commit to project targets that will ensure ongoing orders of prefabricated building components and products. We will eliminate the need to tender our projects, we will always give members first right refusal to participate in projects. Our objective is to reduce costs, streamline construction, and provide superior quality buildings to the marketplace.

The following companies and agencies have been supporting the efforts of the PBI since inception. A formal Memorandum of Understanding is currently under development and will be presented to participants by September 2024. New affiliates will be identified and invited to participate in the PBI as needed for project success.

Manufacturing & Suppliers

Mitsubishi Electric
UnitiWall
Athroto
Kontrol Technologies
Kalesnikoff
Stormwell
New Earth Solutions

Construction & Development

Cetana Group
Hildebrandt Contracting
Precision Capital
Stretch Construction
Scott Construction
Collegium

Architects, Engineers & Designers

Synergy Partners
Firm6
Enform Architects



2024 PBI Administration & Leadership



Public Sector Affiliates

Engaging public sector leadership is crucial for driving innovation and achieving impactful results in the construction sector. The PBI will leverage the strengths of both sectors:

- the public sector's regulatory oversight and long-term vision,
- and the private sector's agility and technological advancements.

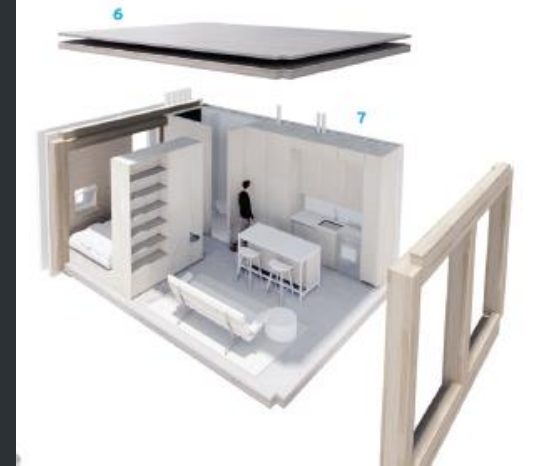
A collaboration through the PBI will streamline processes, improve efficiency, and ensure that building projects meet the highest standards of quality, safety and sustainability. By working together, public and private affiliates will foster an environment of continuous improvement, accelerate the adoption of cutting-edge technologies, and ultimately enhance the quality and resilience of our objectives.

Public Sector Agencies & Academia

- Natural Resources Canada – GCWood
- National Research Council
- PacifiCan
- NGen
- SE Health
- Alberta Ecotrust
- Okanagan College
- University of British Columbia – Okanagan

PBI Affiliates: Combined Expertise

- Advanced technologies & materials
- Systems design & manufacturing processes
- Health sciences & community
- Natural environment & climate resiliency
- Building construction management
- Operating excellence & energy efficiency
- M&A, Investments & Financing



Kelowna

British Columbia

Building our Prefab Pilot Projects

Building Innovation with Municipal Leadership

Due to the city's unique combination of rapid growth, industry leadership, and commitment to sustainability, Kelowna, British Columbia is the ideal location to launch the Prefab Building Initiative and develop our pilot projects. Kelowna is one of the fastest-growing cities in Canada, with a population growth rate significantly above the national average. This burgeoning population creates a pressing demand for innovative, efficient, and sustainable housing solutions, making it an optimal testing ground for prefabricated building technologies.

The Province of British Columbia is a national leader in mass timber construction and green building innovations, providing a robust network of expertise to draw from. The province's pioneering work in climate change mitigation and

sustainable building practices aligns perfectly with the objectives of the Prefab Building Initiative, ensuring that our pilot projects contribute to broader environmental goals.

Additionally, Kelowna's strategic location offers access to key markets and a supportive community that values forward-thinking development. The city's vibrant economy creates an ideal environment for showcasing the benefits of prefabrication and driving its adoption across Canada. Launching the PBI in Kelowna will not only address local housing needs, but also set a precedent for sustainable urban development nationwide.

Locations across Canada

We have an opportunity to pilot our prefab buildings in Kelowna thanks to the interest of local leadership, but we are also looking at project sites in Alberta and Ontario to expand objectives as soon as possible.



Appendix

**Andrew
Bowerbank**

Market Leadership
Design & Technology



**David
Brough**

Business Leadership
Strategy & Development

**Kenny
Smith**

Engineering Leadership
Buildings & Energy



**Michael
Hildebrandt**

Construction Leadership
Project Management



CPH Group

CETANA PRECISION Hildebrandt
CONSTRUCTION & DEVELOPMENT

Introducing
Construction Optimization



Turn-key project design/build through collaboration

Cetana Group

Unique to the World of Property Development

Founded in 2021, CETANA Group is a unique property development firm built on decades of proven success in building design & technology. Each member of our team is a highly regarded, award winning professional in Canada's building and construction sectors with portfolios of projects that span decades, achieving national and international acclaim.

We are a passionate team of professionals who seek to reimagine community development through the lens of sustainability and wellness, emphasizing climate adaptation principles and people centric designs. We are driven to leverage our collective expertise for tangible change-making on behalf of the common good, demonstrating what is possible and encouraging actors in the built environment to strive for excellence.

Our vision is to inspire responsible leadership.

A founding member of the PBI

- We are committed to transforming the building & construction sector through open collaboration
- We will design/build our own projects with health, and environmental impact at the heart of what we do
- We will collaborate with like minded-developers interested in adopting the latest in sustainable building design
- We will share our experiences across the marketplace to encourage transformation to a low carbon economy.



CETANA

www.cetanagroup.ca

Real Estate Investment Trust

Established in 2023



Available for equity participation in our portfolio

For more information:

www.cetanareit.ca



Confidentiality Statement

This document contains confidential information that is intended solely for the use of the individual or entity to whom it is addressed. The information enclosed herein is proprietary and may include privileged material. Unauthorized review, dissemination, distribution, or copying of this document, or any of its contents, is strictly prohibited. If you are not the intended recipient, please notify the sender immediately and destroy all copies of this document. Any unauthorized use of the information contained herein may result in legal action. Thank you for your cooperation in maintaining the confidentiality of this information.

Forward Looking Statements

This document contains “forward-looking information”. Generally, forward-looking information can be identified by the use of forward-looking terminology such as “plans”, “expects”, or “does not expect”, “is expected”, “budget”, “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates”, or “does not anticipate”, or “believes” or variations of such words and phrases or state that certain actions, events or results “may”, “could”, “would”, “might”, or “will be taken”, “occur”, or “be achieved”. Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the PBI, to be materially different from those expressed or implied by such forward-looking information, including risks associated with the real estate equity industry such as economic and market conditions, the ability to raise sufficient capital, the ability to identify and conclude suitable development, construction and investment opportunities and complete liquidity events on favorable terms. Implicit in this forward-looking information are assumptions regarding the general economy, debt financing availability, availability of investment opportunities, lease turn-over, the counter-cyclical nature of the rental housing market, the growth of rental housing generally in Canada, the creation of large-scale consolidated owner/operators driving the long-term institutionalization and development of the Canadian multi-residential rental housing sector, the anticipated benefits of portfolio scaling, the ability of the PBI to optimize a property’s operating performance, trends in rental housing and the supply and demand of rental housing in Canada, and interest rates. These assumptions, although considered reasonable by the PBI based on information currently available to it, may prove to be incorrect. Although the PBI has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such forward-looking information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, readers should not place undue reliance on forward-looking information. The PBI does not undertake to update any forward-looking information, except in accordance with Securities Laws.