



Supporting First Nations in British Columbia to Implement Culturally-Appropriate and Energy-Efficient New Construction

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August, 2020

Acknowledgments

The author would like to thank the following project mentors for their guidance throughout the duration of the project:

- Eryn Fitzgerald, Community Clean Energy Branch, Electricity and Alternative Energy Division, Ministry of Energy, Mines, and Petroleum Resources
- Katya McClintock, Community Clean Energy Branch, Electricity and Alternative Energy Division, Ministry of Energy, Mines, and Petroleum Resources
- Amy Seabrooke, Conservation and Energy Management, BC Hydro
- Bertine Stelzer, Program Manager - New Construction Market Transformation, BC Hydro

The author would also like to express her sincere gratitude to all the interviewees who offered their time and insights. This report could not have been completed without their willingness to share their knowledge and passion for improving the homes and buildings in First Nations communities. See Appendix A for the full list of interviewees.

This report was produced as part of the UBC Sustainability Scholars program, a partnership between the University of British Columbia and various local governments and organizations in support of providing graduate students with opportunities to do applied research on projects that advance sustainability across the Province of B.C.

The project was conducted under the mentorship of BC Hydro and the Community Clean Energy Branch, in the B.C. Ministry of Energy, Mines and Petroleum Resources. *The opinions and recommendations in this report and any errors are those of the author and do not necessarily reflect the views of the Ministry or BC Hydro.*

The Writer

This report was written by Jenna Hildebrand, a graduate student in the Indigenous Community Planning Concentration at the School of Community and Regional Planning (SCARP). Jenna is a white settler who lives, studies, and works on the traditional, ancestral and unceded territories of the Skwxwú7mesh (Squamish), x̣ṃəθḳẉəỵəm (Musqueam), and sə́ḷílwətaʔṭ (Tsleil-Waututh) Nations. As a white settler conducting research on a subject that impacts Indigenous people, she recognizes the importance of acknowledging her position in relation to this work. For much of her life, Jenna has experienced the privilege of living in houses that are safe and comfortable; houses that feel like home. She recognizes that many Indigenous people across Canada and the world have not had the same experience. A genuine desire and passion to improve the homes and infrastructure in First Nations communities has driven her to conduct this research. Above and beyond that, Jenna's work is grounded in a commitment to actively support First Nations autonomy and self-determination.

The author is grateful for all the interviewees who shared stories that at first, seemed outside the scope of the project. Upon further reflection, however, these stories contributed greatly to her understanding that houses are about more than their materials and structure – rather, they embody the individuals that live within them and help create a sense of pride and belonging for a community and its members. For this project, Jenna connected with individuals, First Nations communities, and organizations who are also passionate about improving the conditions of homes and buildings in Indigenous communities. She is hopeful that moving forward, Indigenous communities across B.C. and Canada will have homes that meet the needs of their present and future generations.

Terminology

“In the history of relations between Canadian institutions and Indigenous peoples, terminology has often been deployed in ways that have been damaging to communities. The terminology used in public discourse has rarely been that actually preferred by Indigenous people, who most often refer to themselves by the traditional name of their specific group. Using the best terminology in any given situation is not just a matter of being ‘politically correct’ but of being respectful and accurate.”

- University of British Columbia, 2018

The following terms used throughout the report are explained using The University of British Columbia’s (2018) Indigenous Peoples: Language Guidelines below:

First Nations:

- » Most, but not all, reserve-based communities in Canada refer to themselves as ‘First Nations.’
- » This report focuses on on-reserve First Nations housing. For the sake of this report as it relates to on-reserve housing, First Nations refers to reserve-based communities in Canada.

Métis:

- » Métis are a specific Indigenous (and Aboriginal) group in Canada with a very specific social history. Until very recently, they have not been regarded as ‘Indians’ under Canadian law and are never considered ‘First Nations.’

Inuit:

- » Inuit are the third Aboriginal group, historically located in the Arctic and legally and culturally distinct from First Nations or legally-defined Indians and Métis.

Indigenous:

- » The term ‘Indigenous’ encompasses all of the above groups, either collectively or separately, and is a preferred term in international usage, e.g., the ‘U.N. Declaration on the Rights of Indigenous Peoples.’

Reserve:

- » An ‘Indian Reserve’ is a legally defined geographical area belonging to a community, and historically, to which a community was confined. When the report speaks to on-reserve housing, it is referencing housing located on an ‘Indian Reserve,’ as defined in the Indian Act.



Multi-unit Passive House, Heiltsuk First Nation. Photo credit: Britco LP.

Table of Contents

Executive Summary	6
1. Introduction	8
1.1 About the Project	9
1.2 Why is this Research Important?	10
1.3 Related Policy Context	12
1.4 Methodology	15
2. Background	17
2.1 Historical Context: On-Reserve Housing	18
2.2 Building Codes and Standards	21
2.3 Funding	22
2.4 Culturally- Appropriate Design and Development	23
2.5 Energy-Efficiency	27
3. Interview Findings	
3.1 Culturally-Appropriate Buildings and Homes	30
3.2 Energy-Efficient Buildings and Homes	34
3.3 Engaging with Building Codes and Standards	37
3.4 Barriers	40
3.5 Success Factors	43
4. Recommendations	47
5. Looking Forward: A Shift to Systems Thinking	51
References	54
Appendix	58
A. List of Interviewees	59
B. Interview Guide	60

Executive Summary

In B.C. and across Canada, on-reserve housing and infrastructure is largely not meeting the needs of First Nations people and their communities. Due to a history of colonial and assimilatory on-reserve housing policies, many First Nations people are living in substandard housing conditions that are unsafe, unaffordable, and do not reflect or celebrate the cultural differences of individual First Nations. As such, there is a growing interest from First Nations to construct buildings and homes that meet the overall needs and desires of their communities.

Recently passed legislation to implement the United Nations Declaration on the Rights of Indigenous Peoples (UN Declaration) in B.C., in conjunction with several provincial, federal, and Indigenous led plans and initiatives that address climate change, housing, and greater Indigenous autonomy and self-determination, signal an opportunity for the provincial and federal government to support First Nations to implement culturally-appropriate and energy-efficient new construction.

Recognizing this opportunity, the Ministry of Energy, Mines, and Petroleum Resources and BC Hydro, in collaboration with University of British Columbia's Sustainability Scholars Program, initiated this research project. This aim of this project is to help identify opportunities for strengthening policies and programs to support culturally-appropriate and energy-efficient homes and buildings in on-reserve First Nations in B.C. The research sought to understand how First Nations in B.C. are envisioning culturally-appropriate and energy-efficient homes and buildings, the role building standards play in the development of new construction, and ways in which the province can support the development, modification, and implementation of building standards that support culturally-appropriate and energy-efficient new construction in First Nations.

The research methodology included background research, interviews, and analysis. Firstly, the background research provided context on the history and current state of on reserve housing, building codes and standards being followed, and culturally-appropriate and energy-efficient housing design. Secondly, twenty-one semi-structured interviews were conducted to gain a better understanding of the barriers First Nations are facing to implementing energy-efficient and culturally-appropriate buildings and homes, factors contributing to successful projects, and recommendations for programs and policies to support energy-efficient and culturally-appropriate new construction. Lastly, an analysis of the interviews informed the key findings and recommendations included in the report.

The research found that culturally-appropriate buildings and homes are those that meet the needs of the community, are designed with input from the community, are in tune with the natural world and recognize the design expertise of First Nations people. Energy-efficient buildings and homes meet the social, economic and cultural needs of the community, address affordability challenges, lower dependence on fossil fuels, incorporate "place-based" thinking, consider passive design strategies, and often require own source revenue (revenue generated by the First Nation). Further, the mandate for First Nations to build more energy-efficient homes can be found in variety of plans and policies.

Based on the literature and interviews, it is evident that the choice of building codes and standards to follow, as well as their compliance, varies greatly across First Nations in B.C. Funding programs often dictate building code compliance, but follow-up is inconsistent. In addition, interviewees shared that some First Nations are creating their own codes and standards, and that there is interest in developing a First Nations building standard as current provincial and federal building codes do not consider First Nations perspectives.

Regarding barriers, the research found that the main challenges First Nations face implementing new construction projects are related to funding, capacity, community-buy in, and limited land to build on. To address some of these challenges, interviewees shared the importance of support from Chief and Council and community members, creating partnerships to leverage funding and build capacity, using local labour and materials, involving building and construction professionals in the design phase, and having passionate community champions to drive culturally-appropriate and energy-efficient new construction.

The report concludes with **nine recommendations** for how the provincial government can best support the implementation of culturally-appropriate and energy-efficient buildings and homes in First Nations communities moving forward. These include:

- Collaborate with BC Housing, the Canadian Housing and Mortgage Corporation (CMHC), Indigenous Services Canada (ISC), and the First Nations Housing and Infrastructure Council (HIC) to create a one-stop shop for funding applications;
- Support the creation of a First Nations Energy-Efficient Homes Certification and/or subsidize voluntary certification costs for First Nations;
- Support First Nations to access skills training opportunities for their community members;
- Provide support to educate community members on energy-efficiency and home maintenance;
- Provide support to trades professionals on how to install energy-efficient technology;
- Improve First Nations access to Certified Energy Advisors;
- Promote internal collaboration between provincial ministries;
- Create a B.C. First Nations Building Code/Standard Inventory; and
- Support First Nations mentorship networks and communities of practice to share successes and learn from one another.

Throughout the report, there are examples of Indigenous led-housing initiatives. These reveal how First Nations are innovatively solving their own housing challenges. Now is the time for governments, organizations, and allies to listen and support First Nations moving forward to lead energy-efficient and culturally-appropriate construction in their communities.

01.

Introduction

This section introduces the reader to the project, describes the rationale for this research, and explores related provincial, federal, and Indigenous policy context. Lastly, the research methodology is explained.



1.1 About the Project

Description

This project is a collaborative initiative between the Province of British Columbia's Ministry of Energy, Mines, and Petroleum Resources, B.C. Hydro, and UBC's Sustainability Scholars Program. The Province and B.C. Hydro are interested in developing a better understanding of innovative Indigenous housing and building initiatives as well as the state of on-reserve housing¹ and infrastructure in B.C. The aim of this project is to help identify opportunities for strengthening policies and programs to support culturally-appropriate and energy-efficient homes and buildings in on-reserve First Nations communities across B.C. Recognizing that nations are already engaging in the work of constructing energy-efficient and culturally-appropriate buildings and homes, the Province and BC Hydro initiated this research to better understand current community practices, how best to support these practices moving forward, as well as enable First Nations who are just beginning to do this work.

This research project was completed over the course of three months by Jenna Hildebrand as a Sustainability Scholar under the supervision of Eryn Fitzgerald (Ministry of Energy, Mines, and Petroleum Resources), Katya McClintock (Ministry of Energy, Mines, and Petroleum Resources) and Amy Seabrooke (B.C. Hydro).

Research Objective

This research is driven by the following questions:

1. How are First Nations in B.C. envisioning and developing culturally-appropriate and energy-efficient homes and buildings?
2. What role do building standards play in the development of culturally-appropriate and energy-efficient new construction in First Nation communities in B.C.?
3. How can provincial policies and programs support the development, modification, or implementation of building standards that promote culturally-appropriate and energy-efficient new construction in First Nations communities?

The original intent of this research project was to focus solely on on-reserve housing and the role that housing standards play in promoting energy saving opportunities for First Nations in B.C. While conducting this research, however, it became evident that community buildings, such as health centers, community centres, and multi-use complexes (churches, Elder spaces, etc.) can serve a similar function to homes, in that they provide a space for community members to come together to socialize, live their culture, and feel a sense of community and togetherness.



¹ Although this research focuses on housing and buildings on-reserve, many First Nations people living off-reserve, Metis, and Inuit people are also experiencing the destructive impacts of colonialism as they live in substandard housing conditions across Canada.

Scope

The scope of this research project included:

- Completing a literature review regarding culturally-appropriate and energy-efficient housing among First Nation communities in Canada, including both academic and grey literature;
- Completing a scan of grey literature to identify instances of building standards being developed, modified, and/or implemented by Indigenous organizations and/or First Nations in B.C.;
- Contacting individuals from First Nations communities, Indigenous organizations, provincial and federal government, consultants, and academics to better understand the barriers, successes, and lessons learned when completing culturally-appropriate and energy-efficient new construction;
- Completing a high level legal scan to understand the legal landscape that applies to on-reserve housing;
- Completing a program and policy scan to identify existing programs and policies that inhibit or encourage that development, modification and/or implementation of Indigenous-led building standards.

1.2 Why is this research important?

In B.C. and across Canada, housing and infrastructure is largely not meeting the needs of First Nations people and their communities. As stewards of their traditional, unceded territories, First Nations across Canada have the right to safe and affordable housing that meets the needs of their members and instills a sense of pride and ownership within the community. Most individuals who have worked with First Nations communities, and most certainly the communities themselves, are aware of the problematic state of on-reserve housing. As Jonathan Kyser notes (2011), “sub-standard housing conditions are pervasive in Indigenous communities across Canada, within and beyond reserve lands, in both rural and urban settings” (p. 1).

The impacts of decades of colonial housing policies and programs have resulted in First Nations, Métis, and Inuit people living in houses that are overcrowded and highly susceptible to fires, as well as contain high concentrations of mould (AANDC, 2011; Office of the Auditor General (OAG), 2003, 2006, 2011; Optis et. al, 2012; Senate Canada, 2015a, 2015b). According to Statistics Canada (2016) census data, more than a third of First Nations people living on reserves are residing in homes that are overcrowded, and forty-four percent live in homes needing major repairs. A Canadian Housing and Mortgage Corporation (CMHC) (2019) report examining housing conditions on-reserve found that one third (33%) of on-reserve Indigenous households live in adequacy-and-suitability-based housing need² (ASB). This proportion is substantially higher compared to Canadian households (4%) and Indigenous households living off-reserve (6%).

The current state of on-reserve housing for First Nation communities must be understood through the historical lens of the reserve system and the Indian Act, as both continue to inhibit First Nations people’s access to safe, affordable, and culturally-appropriate housing.

² A household lives in ASB need if its dwelling does not meet one or both of the adequacy and suitability standards, and the household would have to spend 30% or more of its before-tax income to pay the shelter costs of alternative acceptable local housing (CMHC, 2019).

Along with substandard housing conditions, First Nations are also facing a massive housing shortfall. In 2015, the on-reserve housing shortage was estimated to be 35,000 to 40,000 by the Department of Aboriginal Affairs and Northern Development Canada (now Indigenous Services Canada) and 85,000 by the Assembly of First Nations (AFN) (Standing Senate Committee on Aboriginal Peoples, 2015a). Given that the Indigenous population in Canada is one of the fastest growing demographics, the shortfall is expected to grow if investments in new construction are not made (Statistics Canada, 2016). From 2006 to 2016, the Indigenous population grew by 42.5%, more than four times the growth rate of the non-Indigenous population over the same period. There was growth for both on-reserve (+12.8%) and off-reserve (+49.1%) (Statistics Canada, 2016). Together, the on-reserve housing shortfall and the growing Indigenous population, highlights the need and increasing demand for newly constructed homes in First Nations communities.

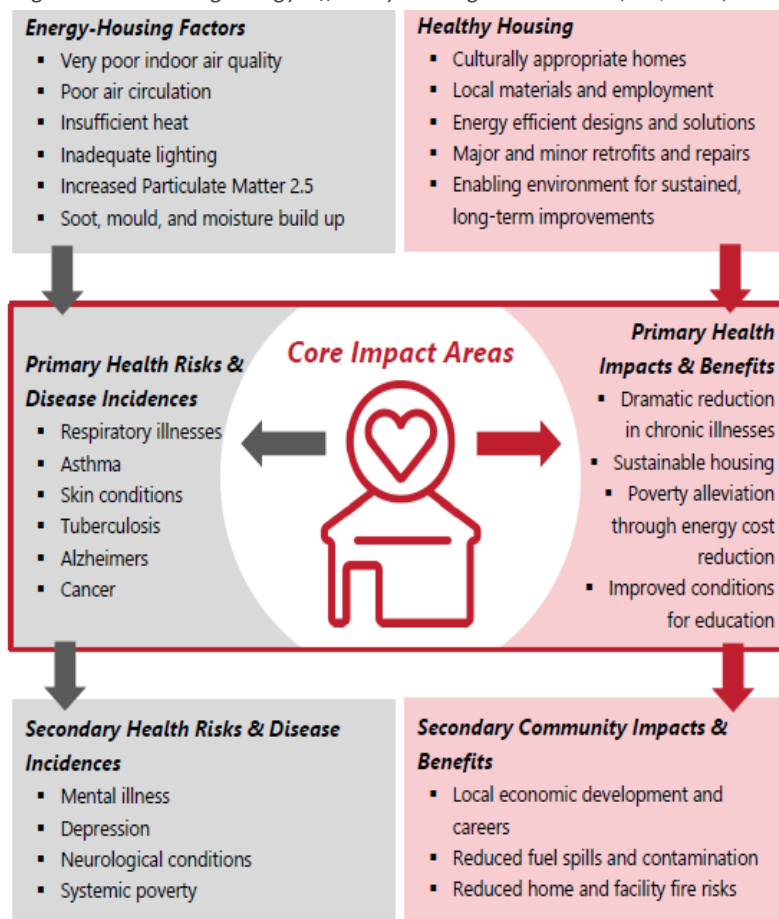
Many First Nations are also experiencing energy poverty. EcoTrust (2020) broadly defines energy poverty as “a lack of affordable access to the energy services that contribute to quality of life” (p. 6). In their recent report, “Moving Toward Energy Security in British Columbia’s Rural, Remote, and Indigenous Communities,” EcoTrust (2020) estimates that energy poverty rates are up to three times higher on reserves than the provincial average. Poor quality housing, lack of access to affordable heating fuels, the rural location of many Indigenous communities, and colonial policies are all factors contributing to on-reserve communities experiencing higher rates of energy poverty.

Although an in-depth discussion on energy-poverty is beyond the scope of this research, it is imperative to understand the chronic underfunding of the construction and maintenance of homes on reserves as part of a broader pattern of structural racism³ (Rezaei, 2017). Not only has the poor construction created implications for energy poverty, it has created serious health outcomes⁴ that have further reaching implications for First Nations families and their life outcomes (Rezaei, 2017).

The figure to the right (from Indigenous Clean Energy, 2019) illustrates how energy-efficiency is a key determinant of Indigenous health.

Connecting energy-efficiency to determinants of Indigenous health further emphasizes the rationale for this research and the urgency of supporting energy-efficient and culturally-appropriate new construction in First Nations communities.

Figure 1: Connecting Energy-Efficiency to Indigenous Health (ICE, 2019)



³ Structural racism is defined “as the macrolevel systems, social forces, institutions, ideologies and processes that interact with one another to generation and reinforce inequities among racial and ethnic groups” (Cited in Geed & Ford, 2011).

⁴ Increased morbidity and mortality due to influenza and other respiratory diseases, diarrhoeal and skin and soft tissue infections, mental and social distress have all been associated with poor housing conditions in First Nations communities (Cited in Larcombe et al., 2020).

1.3 Related Policy Context

There are several provincial, federal, and Indigenous led plans and initiatives, as well as recently implemented provincial legislation driving this research. These include:

Provincial

BC Energy Step Code

In April 2017, the Province of B.C. adopted the BC Energy Step Code (the Step Code) as regulation. The Step Code is a performance-based standard that establishes measurable requirements for energy-efficiency in new construction (Government of British Columbia, 2017). While the Step Code is currently optional for local governments across B.C. to adopt, this gradual strategy aims to prepare municipalities and industry for 2032 when all new buildings must be net-zero energy ready (as mandated in the CleanBC Plan). By 2032, the B.C. Building Code will be equivalent to Step 5, the highest step. Although some First Nations are building to the B.C. Building Code and using the Step Code (this will be discussed in further detail in the report findings), they are doing so of their own initiative, and often at greater cost. There is an interest from First Nations to learn more about how to implement the Step Code and construct new buildings and homes that are comfortable, affordable, safe, and require less energy.

CleanBC

In 2018, the Government of B.C. released the CleanBC Plan aimed at reducing climate pollution, while creating more jobs and economic opportunities for people, businesses and communities (Office of the Premier, 2018). Part of the plan speaks to improving where British Columbians live and work. The CleanBC Plan states that by 2032, all new buildings constructed in B.C. will be “net-zero energy ready” (Government of British Columbia, 2018). This change will be enacted through the B.C. Building Code, which applies to all new construction in the province. Although First Nations are not legally required or explicitly encouraged to build up to the B.C. Building Code (legal considerations will be explored in greater detail in the later sections of this report) some First Nations are following

the B.C. Building Code for new on-reserve construction. The CleanBC Remote Community Energy Strategy mentions energy-efficiency support for remote communities, many of which are Indigenous, but the strategy does not specify what this support entails. Although new construction in First Nations communities is not explicitly mentioned in the CleanBC Plan, energy-efficient and culturally-appropriate new construction in First Nations communities will need to be considered if the province is to meet the targets identified in the plan.

Together BC: British Columbia’s Poverty Reduction Strategy (TogetherBC)

Released in 2019, TogetherBC is the Province’s first-ever poverty reduction strategy. The strategy includes information on the actions the Province is taking to address homelessness, including investments in housing for Indigenous peoples, both on- and off-reserve. Through the Building BC: Indigenous Housing Fund, the government is investing \$550 million to build 1,750 homes over the next 10 years for Indigenous peoples. Nearly 780 off-reserve homes and close to 370 on-reserve homes have been funded in twenty-six different communities across the province (British Columbia, 2019). The Building BC: Indigenous Housing Fund is the first major investment in on-reserve housing for Indigenous peoples ever made by a provincial or territorial government in Canada. However, the demand for housing in First Nations will require more funding to address the housing shortfall they are facing.

The strategy also mentions the announcement by the Province in November of 2018 that First Nations in B.C. will share provincial gaming revenue. Through this long-term stable revenue source, First Nations will be able to invest in priorities such as housing and infrastructure.

Declaration on the Rights of Indigenous Peoples Act (DRIPA)

In November 2019, Bill 41, the Declaration on the Rights of Indigenous Peoples Act (DRIPA) was passed by the Province of B.C., making it the first province in Canada to pass legislation on the implementation of the United Nations Declaration on the Rights of Indigenous Peoples (UN Declaration)⁵. The UN Declaration addresses Indigenous peoples' rights to housing in Article 21 and Article 23. This includes the right to improved social conditions through housing and the right to be actively involved in developing and determining their housing (The United Nations General Assembly, 2007). As such, supporting First Nations to construct buildings and homes that meet the needs of their communities aligns directly with the stated aim of Bill 41.

Article 21

Indigenous peoples have the right, without discrimination, to the improvement of their economic and social conditions, including, inter alia, in the areas of education, employment, vocational training and retraining, housing, sanitation, health and social security.

Article 23

Indigenous peoples have the right to determine and develop their priorities and strategies for exercising their right to development. Indigenous peoples have the right to be actively involved in developing and determining health, housing, and other economic and social programmes affecting them, as far as possible, to administer such programmes through their own institutions.

Federal

Pan Canadian Framework on Clean Growth and Climate Change

The Pan-Canadian Framework on Clean Growth and Climate Change is the Federal Government's plan to meet emission targets, grow the economy, and build resilience to climate change. The Framework has four main pillars: pricing carbon pollution; complementary measures to further reduce emissions across the economy; measures to adapt to the impacts of climate change and build resilience; and actions to accelerate innovation, support clean technology, and create jobs (Government of Canada, 2016). Included in the framework's recommended actions under the built environment is to support building codes and energy-efficient housing in Indigenous communities. The framework states that "governments will collaborate with Indigenous peoples as they move towards more efficient building standards and incorporate energy-efficiency into their building-renovation programs" (p. 17).

The framework acknowledges that Indigenous peoples have identified the need to incorporate Traditional Knowledge and culture into building designs, and that governments will partner with Indigenous peoples in the design and relevant policies and programs for new housing.

⁵ The Truth and Reconciliation Commission (TRC) confirms the United Declaration on the Rights of Indigenous Peoples (UN Declaration) to be the framework for reconciliation between governments and Indigenous people.

National Housing Strategy

In 2017, the Federal Government announced Canada's first ever National Housing Strategy (NHS). The NHS is a 10-year plan, with a \$40 million budget, to help reduce homelessness and improve the affordability, availability and quality of housing for Canadians. The Canadian Housing and Mortgage Corporation (CMHC) are leading the implementation of the NHS.

Part of the strategy includes improving housing in Indigenous communities. However, the only Indigenous specific funding mentioned is \$300 million to assist families in the North with housing.

There are other funds (not Indigenous specific) that Indigenous governments and organizations can apply for, including the Co-Investment Fund – New Construction⁶. The focus of this fund is to develop energy efficient, accessible and socially inclusive housing for mixed-income, mixed-tenure and mixed-use affordable housing uses. Applicants must demonstrate that their projects are “designed to achieve a minimum 25% decrease in energy consumption and Greenhouse Gas (GHG) emissions over the same project designed to the requirements of the 2015 National Energy Code for Buildings (NECB) or the 2015 National Building Code (NBC)” (CMHC, 2018). Applicants applying to the Co-Investment Fund are required to submit energy modelling, key physical and operational features impacting the building envelope, input and output files for the energy consumption modelling, any supplemental calculations for energy contributions of renewable energy systems, and GHG calculations, methodology and assumptions.

Shortly after releasing the National Housing Strategy, the Federal government began consultations to create separate strategies for Inuit, Metis, and First Nations housing needs. The date for when the strategies will be released has yet to be announced.

Indigenous Led

First Nations Housing and Infrastructure Council (HIC)

B.C. First Nations Housing and Infrastructure Council (HIC) is leading the transfer of housing and infrastructure authority from Indigenous Services Canada (ISC) to First Nations in BC. The Council was formally established in 2017 in response to a political mandate from the members of the B.C. First Nations Leadership Council (B.C. Assembly of First Nations, First Nations Summit and Union of B.C. Indian Chiefs) to create a First Nations controlled housing and infrastructure authority. The Council's mandate is to assume authority and control over the First Nations housing and infrastructure program delivery in B.C., and to deliver associated housing and infrastructure services. The Council's housing priorities include streamlining funding and maximizing the resources designed to meet the needs of First Nations. Infrastructure priorities include providing new funding opportunities and services to address the gap in conditions on- and off-reserve. Although in its infancy, the HIC may allow for greater flexibility and opportunities for First Nations to construct their homes and buildings to be energy-efficient and culturally-appropriate.

⁶ Other Indigenous and Northern Funding initiatives under the National Housing Strategy are explained here: <https://www.placetocallhome.ca/progress-on-the-national-housing-strategy#:~:text=On%20November%2022%2C%202017%2C%20the,housing%20for%20Canadians%20in%20need.>

1.4 Methodology

Background Research

A literature review was conducted to provide background context on the following:

- The history and current state of on-reserve housing in Canada;
- Building codes and standards being followed and implemented by First Nations in B.C.;
- Culturally-appropriate building and housing design in First Nations communities;
- Energy-efficient building and housing design in First Nations communities; and
- Examples of energy-efficient and culturally appropriate new construction in First Nations communities in B.C.

The background research was drawn from academic papers and grey literature, which included government reports, audits, and plans, consultant reports, legal decisions, housing policies, strategies, and toolkits, and project assessments. Census data on Indigenous peoples was reviewed to better understand the magnitude of the housing crisis on- and off- reserve. The literature review was useful in providing a more in-depth understanding of on-reserve housing and its colonial history, while also emphasizing that there is no “one-size fits all approach” to best support First Nations with the implementation of energy-efficient and culturally-appropriate buildings and homes. Additionally, the review helped to identify some research gaps, including a lack of information on the building codes and standards that First Nations are using as well as implementation and compliance.

Interviews

The interviewees for this project were established through the author’s personal connections, conducting background research, and suggestions from other interviewees. After reaching out to thirty-five contacts, the researcher completed twenty-one semi-structured interviews with people who have related experience to energy-efficient and

culturally appropriate new construction in First Nations communities across B.C. and Canada. Interviewees included:

- First Nations employees;
- First Nations members;
- Housing consultants;
- Provincial and Federal Government staff;
- Building professionals, including architects, contractors, housing inspectors; and
- Academics.

The interviews were conducted to gain a better understanding of the following:

- The process for new construction;
- Housing governance;
- Features of energy-efficient new construction;
- Interpretations of culturally-appropriate design entails;
- The building codes and standards First Nations are using and how they are implemented;
- Barriers First Nations are facing to implementing energy-efficient and culturally-appropriate buildings and homes;
- Factors contributing to the success of new buildings and homes that are energy-efficient and culturally-appropriate; and
- Recommendations for programs and policies to support the implementation of energy-efficient and culturally-appropriate buildings and homes in First Nations communities across B.C.

These interviews were crucial for understanding the challenges and barriers First Nations face initiating energy-efficient and culturally-appropriate new construction. However, they also revealed the dedication and passion many individuals and First Nations communities have for creating buildings and homes that are good for the environment and the people using them.

See Appendix B for the interview guide.

Analysis

The responses from the interviewees were analyzed and themed. The results from the interviews inform the key findings on main research topics, namely: 1) the current landscape of culturally-appropriate and energy-efficient new construction in First Nations communities in B.C., 2) how First Nations are engaging with various building codes and standards, and 3) the barriers and successes they are experiencing. The interview analysis also informed the recommendations explored in the latter part of this report.

Limitations

As a non-Indigenous researcher conducting this work, it is important to acknowledge my position limits my understanding of the conditions of on-reserve housing, the complexity of accessing resources, and the overall systemic racism that is perpetuated through barriers in accessing affordable and safe housing. It is important to acknowledge these limits as they reduce the capacity for this research to provide a full landscape of on-reserve housing and may inadvertently impact the appropriateness of the report's recommendations. Further, any future initiatives stemming from this research should be Indigenous-led.

Another limitation of this project was the short three month time-frame and the COVID-19 pandemic. The length of the project limited the amount of time available to conduct interviews and did not allow for time to develop meaningful relationships. Researchers who are working with Indigenous peoples and communities should take the necessary time to build relationships with the people and communities with whom they are engaging. COVID-19 restrictions made it difficult to have in-depth, personal conversations that would have contributed to relationship building and the quality and depth of the interviews.

Building on this, the researcher only spoke with seven of 203 First Nation bands in B.C. Given this, the key findings and recommendations in the report are far from exhaustive. Further engagement is required to obtain a fuller picture of how First Nations across B.C. wish to be supported in implementing energy-efficient and culturally-appropriate buildings and homes moving forward.

Finally, the focus of this project was on energy-efficient and culturally-appropriate new construction on-reserve, yet many of the interviewees suggested that support for retrofits and upgrades needs to continue and expand. Retrofits and upgrades were not within the scope of this research and therefore further research should be conducted to ensure retrofits, upgrades, and new construction projects address the energy-efficient and culturally-appropriate needs and desires of First Nations communities. The recommendations identified in the last section of the report should be considered alongside existing upgrade and retrofit programs available to nations.

02.

Background

This section is informed by the literature review. It begins with a brief historical overview of on-reserve housing policies and programs. Next, is a discussion on which building codes and standards First Nations are choosing to apply, how they are implemented, and the process around ensuring compliance. Lastly, recommended guidelines for culturally-appropriate and energy-efficient development and design in First Nations communities are summarized.



2.1 Historical Context: On-Reserve Housing

Although an in-depth historical overview of on-reserve housing is beyond the scope of this research, a brief review is important for understanding the current context of on-reserve housing in First Nations communities. Dr. Sylvia Olsen (2016) completed a comprehensive study of on-reserve housing in Canada that explains the history of the Indigenous housing crisis and the persistent failures of the federal system over a span of 65 years. The information in the timeline below is adapted from Olsen's visual representation of the history of housing in B.C. First Nations⁷.

19th Century

Traditional Houses

The 19th century is characterized by traditional houses, including long houses, tipis, and pit houses. First Nations used local materials and had complete housing independence. Also within this time period, the Indian Act (1876) was implemented.

20th Century

Adoption of Western Style Houses

The early 20th century saw the adoption of western style houses, including log houses and stick frame houses. There was little government involvement in housing within mainstream Canadian policy and legislation and marginal government assistance on reserves. At this point in time, First Nations still had a considerable level of housing independence.

1930s

Canadian Housing Crisis (on and -off reserve)

During the 1930s, Canada created two housing systems. The system for on-reserve housing was a welfare housing system controlled by Indian Agents. This system was funded mostly by Band capital accounts, and the assistance offered to First Nations came in the form of building materials. With little government aid and no building standards in place, the on-reserve housing system created poverty in First Nations communities. Meanwhile, the mainstream Canadian housing system created wealth, as the economy was propped up by housing construction and non-First Nations Canadians were able to access finance to purchase homes.

1940s

Band Capital Account Funding

The First Nations housing crisis deepened drastically, and First Nations land and resources continued to be stripped from First Nations communities. Veterans were given Certificates of Possession for reserve land, First Nations sold their land and resources to fund housing (receiving poor compensation for both), and the houses that were built on-reserve during this period were often only built to last ten years.

⁷Dr. Sylvia Olsen's visual representation can be found here: <https://www.fnhic-B.C..ca/our-priority-areas>

1950s

Welfare Housing Program

Housing funding distribution was standardized by the Federal government over this period. Olsen (2016) describes the houses built during this time as “tiny insulated shacks.” Many First Nations had no more land to sell and as a result, they were forced to rely on government assistance.

1960s

Subsidy Housing Program

The failed 1950s welfare program was replaced with the subsidy housing program. The subsidy housing program set funding contributions and discontinued contributions to Band Capital Accounts to fund houses. During this decade, Indian agents were replaced with Band Managers and housing became a source of First Nations internal conflict as communities could not keep up with members’ housing demands.

The poor housing conditions during the 1960s were used as a rationale for the Sixties Scoop⁸.

1970s

CMHC Social Housing Program

CMHC Social Housing programs were introduced in the 1970s. During this period, all new subsidized housing on-reserve was rental housing, however, there were no services to support the transition to rental housing (for example, administration support, tenant policies, etc.). Many First Nations resisted the rent structure and some First Nations began to take on mortgages.

1980s

The Quiet Devolution

This decade was characterized by a quiet devolution of on-reserve housing responsibility to First Nations. The government shifted its language from on-reserve housing being a federal responsibility to a First Nations responsibility. However, no formal agreements were ever signed to officially devolve on-reserve housing responsibility. The funding programs remained in government control despite the new onus on First Nations. During this decade, uptake in CMHC programs increased.

“As cultural superiority was assumed, the house became a tool through which to assert force.”

(McCartney, 2016. p.22)

⁸ “The Sixties Scoop is the catch-all name for a series of policies enacted by provincial child welfare authorities starting in the mid 1950s, which saw thousands of Indigenous children taken from their homes and families, placed in foster homes, and eventually adopted out to white families across Canada and the United States. These children lost their names, their languages, and connection to their heritage.” (CBC News, 2017). Retrieved from <https://www.cbc.ca/cb.c/docs/pov/features/the-sixties-scoop-explained>

1990s

New On-Reserve Housing Policy

Due to inadequate federally managed social welfare housing, subsidy housing, and CMHC social housing programs, many First Nations faced high levels of debt and went into 3rd party management or co-management arrangements. The 1996 On-Reserve Housing Policy continued to push the responsibility of on-reserve housing onto First Nations, without properly consulting them on this policy direction⁹. The four stated principles in the policy were: 1) First Nations control, 2) First Nations expertise, 2) shared responsibilities, and 4) increased access to private sector financing. Funding, and the power that comes with it, however, remained centrally controlled by the federal government. Given this policy structure, government funded houses were seen as expressions of colonialism.

2000s

Home Ownership

Banks began to extend mortgage lending tools to reserves to encourage home ownership. First Nations developed highly effective housing programs with housing policy regimes and management systems. In addition, some federal housing programs were transferred to the provinces.

The 2000s also marked the height of the mould crisis on-reserves. A survey conducted between 2002 and 2003 by the First Nations Centre and the National Aboriginal Health Organization found that 44 percent of respondents (10,616) living on reserves in Canada experienced mould growth in their homes (cited in Optis et al., 2012). Structural damage to the building envelope, overcrowded homes, and insufficient use of ventilation systems are all factors resulting in increased mould growth¹⁰.

2010s

BC First Nations Housing & Infrastructure Authority: First Nations Housing Self Determination

Over the past decade, there has been a movement towards First Nations housing self determination. Indigenous Services Canada (ISC) signed a Memorandum of Understanding (MOU) with the First Nations Housing and Infrastructure Council (HIC) (as directed by three B.C. First Nations leadership groups) to transfer authority and responsibility for housing and infrastructure services to First Nations. During this time, B.C. also became the first province in Canada to allocate funding for on-reserve housing.

In sum, the federal government controlled the on-reserve housing delivery system through a multitude of federal programs and policies created without the input of First Nations. And, as represented by the timeline above, government controlled on-reserve housing policy has perpetuated practices of colonization and assimilation by controlling the relationship between First Nations land and the houses built on that land. By controlling First Nations housing, the Canadian state sought to assimilate First Nations.

⁹ Lindsay Monk (cited in McCartney, 2016) states that the 1996 On-Reserve Housing Policy was championed by the federal government for its increased flexibility as funding was tied to long-term planning initiatives developed locally rather than specific, individual projects. A 2011 evaluation of the policy revealed that the program “did not adequately incorporate First Nations’ perspective and was poorly communicated to First Nations” (OAG, 2011). McCartney (2016) notes that “downloading control was not accompanied by the requisite resources to develop the capacity or plans required to create localized systems, thus undercutting any chance the policy may have had at success” (p. 25).

¹⁰ The poor conditions of on-reserve homes must also take socioeconomic factors into consideration. These include: disenfranchisement from traditional territory, high unemployment rates, lack of home ownership, and insufficient federal funding for on-reserve housing and socioeconomic improvements, among others (Optis, et al., 2012).

The welfare housing program, the subsidy program, and the CMHC housing programs, in tandem with the removal of decision-making power, under the Indian Act, resulted in the housing crisis First Nations' are experiencing in communities across B.C.

Over the past decade, First Nations have applied increasing pressure to establish greater autonomy and self-determination in relation to on-reserve housing. As a result, there is an important role for provincial and federal governments to play supporting the vision of First Nations who are interested in constructing energy-efficient and culturally-appropriate buildings and homes in their communities.

2.2 Building Codes and Standards

While building codes are in place and systematically enforced throughout Canada, this is not the case in many First Nations communities. Examining the history of on-reserve housing reveals both confusion and inconsistency as to what building codes and standards apply to on-reserve housing.

Karen L. Weslowski (2018) notes that much of the confusion with respect to the applicable building code may arise due to First Nations being federally regulated pursuant to the Indian Act. Because the Indian Act is a federal act that governs land use on reserves, there is the assumption that the National Building Code of Canada applies. However, the National Building Code is a model building code that forms the baseline building code for all provincial building codes. The National Building Code has no legal status unless it is adopted into legislation. Similarly, the B.C. Building Act (the Act governing the B.C Building Code) also does not apply on reserves¹¹. Witnesses for Senate Canada's (2015b) report on the challenges and successes of housing on First Nation reserves, state that the poor quality of homes on reserves can be attributed to a "regulatory gap" in the application of building codes. The regulatory gap exists because federal laws are not designed to cover development or construction on federal land, and most provincial Acts also do not apply on reserves.

Under Section 81 of the Indian Act, First

Nations have by-law making authority for the "regulation of the construction, repair and use of buildings, whether owned by the band or by individual members of the band." Bylaws for building code compliance are necessary if First Nation communities wish to put in place a system of housing inspections during the construction phase. Many First Nations, however, have not implemented bylaws.

Self-governing First Nations and First Nations who have adopted their own Land Codes can develop land use by-laws¹². Through these bylaws, they can then adopt pre-existing building codes or create new ones. Weslowski (2018) notes that most First Nations who have adopted Land Codes have not created their own codes, but rather incorporated the provincial building code or the National Building Code requirements into their own building bylaws.

Enforcing building codes takes a significant amount of human and financial resources. Due to the impacts of historical and ongoing colonization, many First Nations do not have the capacity to enforce building codes, even if they are adopted into bylaws, or appear in housing policies and plans. There is a cost associated to ensure that inspectors have the necessary errors and omissions insurance to conduct these inspections on reserve.

There are also financial costs associated with finding and hiring Building Officials (inspectors)

¹¹ The B.C. Building Act creates consistency in technical requirements across the Province, allows for flexibility for local governments to set technical building requirements to meet local needs, and sets training and qualification requirements for building officials. Part 2, Section 6, of the Act explains that under the final agreement of a treaty First Nation, the government is required to negotiate and attempt to reach agreement with the Nation to establish standards for buildings and structures.

¹² Some First Nations in B.C. have entered into agreements with the federal government to assume administration of their reserve lands under their Land Codes made under the First Nations Land Management Act. An overview of the First Nations Land Management Regime written by Shalene Jobin and Emily Riddle for the Yellowhead Institute, can be found here: <https://yellowheadinstitute.org/wp-content/uploads/2019/09/fnlma-overview-factsheet.pdf>. Other First Nations have pursued B.C. Treaty or self-government agreements. An explanation Modern Treaties and Self-government agreements can be found here: <https://www.rcaanc-cirnac.gc.ca/eng/1573225148041/1573225175098>

from outside of First Nations communities. The inspection of new homes in remote communities costs more than inspections in communities near urban centres or rural parts of Canada. The costs are considerably more as First Nations must fly inspectors in. To help offset these costs, the First Nations National Building Association (FNNBOA) created A Technical Reference Manual to Conduct Residential Teleinspections (updated in 2020) in First Nations communities. In virtual teleinspections, the building-project or housing manager, or the contractor, will provide a visual inspection of the project and provide photographs of specific aspects of the construction process or phase. In addition, the contractor must complete a checklist to demonstrate that other required work in that inspection stage has been completed (FNNBOA, 2020). Although an in-person site visit is still the best method for inspections, the virtual option is helpful for First Nations who have time, distance, and financial constraints.

Overall, the literature on building codes and standards suggests there is a large discrepancy in the codes and standards that First Nations are following and how they are implementing them. Available reports imply that building code compliance varies between communities (OAG, 2003; Senate Canada, 2015a; Senate Canada, 2015b; AANDC, 2017).

2.3 Funding

The Indian Act has created challenges for First Nations communities trying to access financing for on-reserve housing and infrastructure. Section 89 of the Indian Act prevents the seizure of real and personal property on reserve and prohibits the use of on-reserve property as collateral (Senate Canada, 2015b). These restrictions make access to loans required to finance homes and community infrastructure difficult for First Nations, ultimately forcing First Nations communities to

rely on government funding and/or find other sources of funding¹³.

There are some sources of funding that require a certain level of building code compliance. According to the CMHC website, First Nations communities that access funding from CMHC's On-Reserve Non-Profit Housing Program (Section 95)¹⁴ must complete a declaration form stating that all units meet the National Building Code of Canada's requirements and local zoning and building bylaws and regulations. A Certificate of Building Code Compliance is required at 3 different stages in the construction process. The Certificate is to be signed by a housing inspector who completed the compliance inspection, or alternatively, by an engineer or architect¹⁵. CMHC also offers property financing and loan renewals for affordable housing projects, insured loans to help First Nation members living on-reserve get access to financing for housing projects, Proposal Development Funding (PDF), and Seed Funding for new construction. There is limited publicly available information on if the latter mentioned funding programs require building code compliance. As previously highlighted, there is also funding available under the NHS's Co-Investment Fund – New Construction (not Indigenous specific fund) which CMHC oversees. This funding has strict energy-efficient requirements and requires funding recipients to build above the National Building Code.

First Nations in B.C. can also access funding through Indigenous Services Canada's (ISC) New Approach for Housing Support (NAHS) program that supports First Nations to better and more effectively leverage funding, develop housing plans and policies and manage housing in their communities (ISC, 2018). The NAHS is delivered through the annual First Nations Infrastructure Investment Plan process, which helps ISC assess infrastructure needs and strategically plan infrastructure investments in First Nation communities across Canada (ISC, 2017). The Canadian Press (2014) reported

¹³ The report "Standing Tree to Standing Home: A Framework for Assessing Community Housing Systems," prepared by EcoTrust (2018) includes a housing and infrastructure financial resource guide for communities. The report can be found here: <https://ecotrust.ca/latest/research/a-framework-for-assessing-community-housing-systems-2018/>.

¹⁴ The On-Reserve Non-Profit Housing Program (Section 95) administered by CMHC provides funding for non-profit rental housing projects in First Nation communities. First Nations can apply for subsidies and loans to help construct, purchase and rehabilitate, as well as manage non-profit housing in their communities. The housing subsidy is provided to the community to help them operate and administer affordable rental housing. More information on the program can be found here: <https://www.cmhc-schl.gc.ca/en/developing-and-renovating/funding-opportunities/funding-first-nations-development/on-reserve-non-profit-housing-program-section-95>.

¹⁵ Some communities have internal housing inspectors who can complete these forms, while others must bring in external inspectors which can be costly. The CMHC funding does not factor in this extra expense.

that since 1983, any new construction built on reserve with federal money must meet the National Building Code, but the requirements for First Nations to provide the department (Indigenous and Northern Affairs Canada, now Indigenous Services Canada (ISC)) with inspection reports varies from region to region. Other investigations and evaluations have reported similar findings, where compliance is inconsistently regulated and greatly depends on the capacity of individual First Nations to enforce the code (Senate Canada, 2015b).

First Nations in B.C. are now able to access funds through BC Housing. As previously mentioned, the announcement of the Building BC: Indigenous Housing Fund made B.C. the first province to fund on-reserve housing. The fund pledges to invest \$550 million over the next 10 years in order to build and operate 1,750 new units of social housing both on- and - off-reserve. There is no publicly available information on what building codes and standards must be adhered to once securing this funding, but interviews conducted by the author revealed that new construction projects funded by BC Housing must, at a minimum, be built up to the B.C. Building Code. However, for their applications to be competitive, they are encouraging First Nations applying for funding to build to Step 3 and 4 of the Step Code.

Further information on how First Nations are engaging with and implementing building codes and standards as well as the challenges they face related to funding can be found in the Interview Findings Section of the report.

“Communities with housing managers were more likely to have transparent housing policies, to have and enforce building codes, to implement inspection and maintenance programs, and to collect rents to help maintain the housing stocks.”

(Senate Canada, 2015a, p. 34)

2.4 Culturally-Appropriate Design and Development

The majority of culturally-appropriate elements discussed in this section are not new to First Nations communities. Many of these elements were historically available and exhibited by First Nations communities prior to the implementation of the Indian Act, which restricted how First Nations could organize their homes and imposed Western/European values.

For example, prior to the Act, many Indigenous peoples' early homes were multi-family, multi-generational, and hosted economic and spiritual activities. As Lindsay Monk (2012) explains, “Indigenous housing did not separate the world into public and the private or delineate the limits of family, as per the European norm” (p. 29). Once the Act was implemented, Indian Agents were tasked with reforming Indigenous housing into European-style homes that represented and constituted European norms of domestic and familial life (cited in Monk, 2012).

Despite the attempt by the Federal Government of Canada to assimilate Indigenous peoples through housing design, Indigenous peoples resisted. As demonstrated in the guidelines explored in this section, many of the culturally-appropriate design elements that were important for Indigenous peoples in the past remain pertinent in the present.

Several design guides have been created in recent years to discuss culturally-appropriate Indigenous housing development and design (AHMA, 2015; Butler et. al, 2017; Coastal First Nations Great Bear Initiative, 2017; B.C. Housing, 2018). Discussed on the next pages are some of the considerations the guides highlight regarding culturally-appropriate buildings and homes.

Community Participation and Engagement

BC Housing's (2018) "Interim Guide to Indigenous Housing Development and Design" suggests that consulting Chief and Council and the larger community at the beginning of the project not only saves time and resources, but it helps ensure community voices are heard and increases community member decision-making. Further, "The New Housing Guide" created by Coastal First Nations Great Bear Initiative (2017) mentions the importance of preparing the band and new occupants when they move into newly constructed homes. The guide suggests that it is important to share the story of new homes and buildings so community members understand the approach taken and are encouraged to share in the success of the project's completion and maintenance.

Tradition and Culture

In their report "Making a House a Home: Indigenous Engagement and Housing Design in B.C.," Butler et. al (2017) state that "Indigenous people want homes that are reflective of who they are" (p. 46). Suggestions outlined in BC Housing's Guide (2018) and the Coastal First Nations Great Bear Initiative Guide (2018) of ways to incorporate tradition and culture in new construction include:

- Designing for intergenerational connection and traditional practices;
- Building for a diversity of demographics (singles, seniors, youth, small families, large families, etc);
- Managing moisture for different numbers of people at different times of the year;
- Building with resources that are readily available in the community to reflect culture and geography;
- Creating outdoor gathering spaces;
- Providing access to potable water for fish and traditional food processing;
- Including space and storage for traditional practices and equipment;
- Incorporating community kitchens;
- Providing access to natural light and views;

and

- Including artwork or aesthetic design features local to the community.

A design project completed with students in the Department of Architecture at the University of Manitoba and with two Dene First Nations communities echoes these suggestions. The project's findings suggest that community members want more opportunities to transfer knowledge from Elders to younger generations and found that flexible spaces and appropriate utilities and resources within the home was one way to facilitate this connection (The Northern and Aboriginal Health Research Group, 2018).

Although there may be similar goals from Nation to Nation – such as the intergenerational transfer of knowledge – the way tradition and culture are incorporated into new construction varies depending on the context and variety of different cultures, territories, populations, needs, and available resources (AHMA, 2015). When thinking about design and development, it is imperative to avoid prescriptive, "one-size fits all" approaches.

"The house is a powerful cultural tool, and housing systems should not be reduced to only the creation of shelter or isolated dwelling units, but must be considered as part of a complex network of community assets."

(McCartney, 2016, p. 21)

Climate and Location

The importance of considering the geography and climate of a location before building is stressed in several of the design guides. Butler et. al (2017) note that historically, many Indigenous homes have not been built to withstand rainy and cold climates, leading to mold issues and deterioration. BC Housing's Guide (2018) includes the following design elements to consider when planning homes for specific climates in the province:



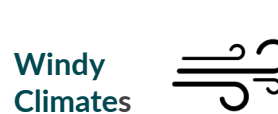
- Roof overhangs should be large enough to cover walls, so cladding is protected.
- To ensure water does not drain into the home, landscaping should slope away from the building.



- Roof overhangs should be large enough to cover walls, so cladding is protected.
- Roof pitch should be high, so snow does not accumulate on the roof.
- Ensure roof is designed to avoid shedding snow in front of doors.



- Summer home overheating can be limited by including exterior, window shading. When properly designed, these sunscreens or overhangs block the summer sun while allowing winter sun to enter the home.
- For areas at risk of wildfire, locating plants, wood and other storage away from the home improves safety.



- Home wind load can be reduced with landscaping. This may include planting evergreen trees or hedges to create a windbreak or taking advantage of adjacent buildings.
- Limiting the number of windows on the wind-facing side of the home can also help mitigate wind impact (p.11).

The Nuxalk Nation¹⁶ developed building standards to ensure their homes can withstand the weather of the wet west coast. A specification booklet was created and acts as a template for other First Nations to adopt or use to their benefit. The specification booklet was shared with other West Coast Nations, including the Skidegate Nation on Haida Gwaii. The specifications are outlined in “New Housing Guide: A Primer for Building Culturally Appropriate, High Performance Homes in the Great Bear Region” (Coastal First Nations, 2017). Specifications include:

- Three-foot overhangs and appropriately fastened metal roofs to accommodate the high winds and driving rain experienced on the Coast.
- Proper rainscreen on all exterior surfaces, to ensure any moisture that hits the home does not seep through the building into the walls.
- Natural indoor cross-ventilation within rooms and homes by using techniques such as undercut interior and closet doors, and louvered interior and closet doors (slats for moisture to move and dry).
- Interior venting in closets to ensure moisture is not trapped on wet clothes.
- Clear span or structural grade trusses to ensure loads are transferred to the outside walls, so that there is flexibility in placing walls wherever it is desired and the home can be adapted over its lifespan.
- Mould-resistant drywall, compound, and fibre tape, or other non-moulding interior surfaces. Mud rooms to keep wet clothes and shoes outside of the main building envelope.

Construction and Sustainability

Quality construction methods and materials are key to ensuring new homes are durable and sustainable. Sustainable building practices reflect a larger vision of First Nations housing, as there is often a focus not simply on protecting the environment but in regenerating it (Butler et. al, 2017). The Aboriginal Housing and Management Association (2015) guide identifies some characteristics of sustainable buildings as less harmful to the earth, easier and cheaper to maintain, energy-efficient, built with quality, durable materials, and designed to minimize common health and safety risks. Overall, sustainable buildings that incorporate Indigenous values of environmental stewardship are buildings that are designed for the long term and with future generations in mind.

Capacity Building

New construction projects in First Nations communities offer an opportunity to build capacity in the community and generate income by employing community members throughout various stages of the project, from planning through to construction and operations. First Nations communities can build capacity and generate employment through hiring local carpenters/labourers/contractors, partnering with local employment programs, providing access to training and apprenticeships, and working with contractors to encourage them, through conditions in contractors or through established relationships, to hire community members. Further, communities who operate their own businesses to implement new construction (such as construction companies or sawmills) can provide employment opportunities and help strengthen their local economies.

The culturally-appropriate design and development considerations above are not meant to be an exhaustive list. As a rule, prescriptive, blanket approaches to culturally-appropriate housing design should be avoided given that the housing needs of each community are unique and specific to that community.

¹⁶ Richard Hall, the former Nuxalk Nation Housing Manager, developed these building standards with the assistance of construction and building science professionals.

2.5 Energy-Efficiency

In a BC Hydro Developed course on “Energy Efficiency for First Nation Housing Managers,” Pinna Sustainability (n.d.) describes energy-efficiency as “using less energy to provide the same service” (p. 4). The course also identifies several variables that energy-efficiency is dependent on, including the quality of materials and construction practices when the home is first built, proper maintenance of the home on an ongoing basis, and how residents use the home.

The BC Housing Guide (2018) offers a list of suggestions for cost-effective ways to increase home performance when constructing new homes. These include:

- Square floor plans that help optimize the floor area in relation to the wall area, as complex layouts with more corners and joints create opportunities for heat loss to occur.
- Multi-unit buildings that take advantage of the transfer of heat between walls and floors and are generally more efficient than single detached homes.
- Aligning homes on an east-west axis can allow natural heating from the sun in the winter, with neighbouring homes providing protection in the summer.
- Strategically adding more insulation and ensuring air tightness of the building envelope helps minimize heat loss and eliminate cold activity, maximizing the performance of the wall assembly. Use of an exterior air barrier system makes it easier to achieve greater air tightness and is more difficult for occupants to mistakenly damage.
- Ensuring proper ventilation and adding a heat recovery ventilation (HRV) system to



Standards for energy-efficiency in new homes, from “Energy Efficiency for First Nation Housing Managers,” Pinna Sustainability, n.d.

improve indoor air quality. Smaller window-to-wall ratios and using fewer but larger, windows help to reduce heat loss through the glass and frame. Similarly, strategic placement of windows (south versus north facing) and use of higher-performance windows¹⁷ helps limit heat loss (p.13).

The Coastal First Nations Great Bear Initiative New Housing Guide (2018) also includes key steps for building energy-efficient homes. The guide recommends including energy performance standards in the RFP contract, involving a licensed Energy Advisor at the design stage, conducting blower-door tests at the midpoint and final construction stages, and educating home occupants on maintenance and upkeep before they move into the homes. Conducting blower-door tests is also required for all Steps of the BC Energy Step Code¹⁸.

“Two identically constructed homes may consume energy in different quantities depending on the number of occupants in the home, the behaviors and actions of those occupants, and how well the home has been maintained over its life.”

(Pinna Sustainability, n.d., p. 4)

¹⁷ For Step 1, the requirement is to test but not to achieve any specific target outside of the BC Building Code. For all Steps above Step 2, there are performance targets that need to be achieved. Mid-construction blower tests are also not mandatory but highly recommended to allow for timely, cost-effective trouble shooting.

¹⁸ Features of energy-efficient windows include triple pane, low e glass, argon gas filled, rubber infills and improved frames.

What are the benefits of building more energy-efficient and culturally appropriate homes?

- Lower long-term maintenance costs;
- Lower construction costs for remote communities (if using own source labour and materials);
- Improved health and wellness for occupants and community members;
- Homes that are designed for community members to live their culture and instill a sense of pride and ownership;
- Capacity building and employment opportunities for community members, including training and hiring skilled workers; and
- Protection of the environment through efficient use of energy and building materials (Pinna Sustainability, n.d.).

Many First Nations across B.C. are already building energy-efficient and culturally-appropriate buildings and homes in their communities. After reviewing various Indigenous housing design and development guidelines, it is evident that many of the facets of culturally-appropriate homes and buildings align with the desire for First Nations communities to build higher-performance homes.

“Each Nation will pursue high-performance, culturally appropriate homes in their own way depending on local needs and priorities. Energy-efficiency and reduction of fossil fuels use is only one aspect of a high-performance home and needs to be considered with a variety of other housing objectives, such as health, economic development, cultural expression, and others.”

(Coast First Nations Great Bear Initiative, 2018)



Heiltsuk Tiny Homes Project. Photo credit: Heiltsuk Nation.

03.

Interview Findings

This section summarizes the information interviewees shared with the author during twenty-one semi-structured interviews. The author transcribed the interviews and extracted common themes. These themes relate to the current landscape of culturally appropriate and energy-efficient new construction among First Nations communities in B.C., how First Nations are engaging with various building codes and standards, and the barriers and successes they experience.

The interviewees' different backgrounds, along side their related experience in energy-efficient and culturally-appropriate new construction, resulted in a rich array of thoughts, ideas, frustrations, and suggestions regarding how to better support First Nations engaged in culturally-appropriate and energy-efficient new construction.



3.1 Culturally appropriate buildings and homes are...

» Culturally-appropriate buildings and homes are those that meet the needs of the community.

Given that, First Nations communities have had little control over the design of their homes, almost all interviewees emphasized the importance of ensuring that new construction in communities meets the needs and desires of the community members. The interviewees stressed that new buildings and homes should be designed for the people that are living in them. Making the needs of the community a top priority ensures that important cultural elements are incorporated¹⁹. To ensure cultural elements are considered, First Nations must be supported in designing housing that meets the needs of their particular realities and traditions.

Meeting the needs of the community also refers to meeting the demographic needs of the community and being attuned to when these needs shift. For example, one interviewee emphasized the need to shift the way they design Elder’s housing from one bedroom to two-bedroom units for children or grandchildren. Other First Nations communities are experimenting with one bedroom and studio units to house young adults, single adults, and youth transitioning out of care, while others are trying to build large enough homes for multi-generational families to deal with overcrowding. The demographics of each community differ vastly and a culturally-appropriate home is one that accommodates these differences.

Project Highlight: Doig River First Nation Community Building

Doig River First Nation recently completed Canada’s most northern Passive House Design project. Passive Housing benefits include 60 to 80 percent savings in the cost of energy, fresh air year-round, consistent temperatures, and up to a 50 percent reduction in total energy consumption²⁰. Thicker walls and increased insulation also reduce operational costs.

Building Elements:

- The majority of windows have been oriented towards the south to take advantage of solar gain from the low winter sun and minimize heat loss to the north.
- The end gable has been pulled away from the main building to provide a sleeve of light that will softly illuminate the sanctuary with light.
- The slope of the roof is intentionally steep as it is meant to create excellent snow shedding capacity for the intended solar panels required to achieve the Passive House certification.



Doig River First Nation Community Building, Chapel. Photo credit: Doig River First Nation.

¹⁹ Some examples of cultural elements mentioned by interviewees include: meat drying rooms, fish processing areas, gathering spaces, cedar wood features, art work specific to the community.

²⁰ Passive Housing is a third-party building standard, operated and implemented by Passive House Canada. For more information on Passive Housing, see “Active for more comfort: Passive House”: https://www.passivehousecanada.com/downloads/iPHA_Brochure.pdf

The multi-use building is a church, home to the community's Aboriginal Head Start Program, and includes gathering spaces as well as an Elder's lounge. As part of the community's Comprehensive Community Planning (CCP) process, they did a two-day workshop with members. During the workshop, it became clear that the community wanted a church and other spaces in which to gather. Members wanted a space to host weddings, bible studies, and head start programming. The community came up with the idea of a multi-use building. With an Elder's lounge and the Aboriginal Head Start program in the same space, the community hopes to see inter-generational transfer of culture and language.

Doig River is also building five new houses this year intended to meet Step 3 of the Energy Step Code. The homes will be for Elders and individuals on social assistance. Constructing more energy-efficient buildings and homes is a top priority for the community as they have no connection to natural gas. Community members' homes are heated with electricity, firewood, or propane. As a community, they made the decision to focus on culturally-appropriate and energy-efficient new construction, not only to reduce long-term costs, but to improve the health and wellbeing of community members.

» Culturally-appropriate buildings and homes are designed with input from the community.

Interviewees noted that carving out space for the community to actively participate throughout the duration of the project, from the design stage to completion, instills a sense of pride and ownership. The importance of including all demographics in this process was also stressed. Involving community members in development processes also encourages a sense of ownership over the building, which in turn, encourages community members to respect and take care of the space.

Project Highlight: Heiltsuk Nation Tiny Homes

To address the urgent housing shortage in their community, the Heiltsuk Tribal Council partnered with the University of British Columbia's (UBCs) Indigenous Research Support Initiative (ISRI), the School of Architecture and Landscape Architecture and the Faculty of Forestry, as well as FPInnovations and Mitacs to develop a culturally and environmentally suitable housing design for their newly created 46-lot subdivision in Bella Bella.

A series of engagement sessions, alongside a housing survey/questionnaire, were used to gather community input on the housing design. The resulting home design is a 384-sq foot home that is small enough to allow for two homes to be placed on one lot to optimize the space in the subdivision (Pizzirani, 2018). The culturally-focused tiny home design will provide independent living to individuals, couples, and young families within the Heiltsuk community.

The construction team for the project consists of mostly Heiltsuk members who gained construction skills with training support from Builders without Borders. Youth enrolled in a wood-working class at Heiltsuk school are also supporting the project by designing and building benches for the front porches of the new tiny homes.

All stages of the project—idea, design, and implementation – have incorporated Heiltsuk Nation input.

“The lessons learned throughout this project exemplify the importance of community-led project that emphasize community aspiration and values, collaborative partnerships, and intergenerational planning and involvement.”

(cited in UBC, 2018)



Heiltsuk Nation Tiny Homes Project. Photo credit: Heiltsuk Nation.

» **Culturally-appropriate buildings and homes are in tune with the natural world.**

Several interviewees stressed the importance of constructing buildings and homes in relationship with the environment and designing them to perform for the climate they are in. This means thinking about where the building is located, incorporating strategies for retaining heat and the air, wind direction, cross ventilation, and ensuring the building responds and aligns with the seasons. These passive design strategies help to manage heat gain and heat loss throughout the year and optimize the use of additional mechanical equipment to keep a home comfortable.

» **Culturally-appropriate buildings and homes recognize the design expertise of First Nations people.**

First Nations have always applied their expertise to the design and implementation of housing. One interviewee used the tipi as an example of this expertise. The conical shape with the hole at the top allowed them to burn inside and the door faced a certain way for ceremonial and practical purposes. Examining the design of the tipi reveals that First Nations knew exactly how to build homes to meet their needs. Other First Nations have modelled new construction after traditional long houses or cabins. Non-Indigenous building professionals (architects, designers, contractors) supporting First Nations must recognize Indigenous expertise and include First Nations in the design process.

» Culturally-appropriate buildings and homes involve Indigenous professionals.

Although there are many non-Indigenous architects, planners, and contractors (among others) supporting First Nations construction of culturally-appropriate buildings and homes, it is ideal for Indigenous people to lead their housing. Interviewees noted how important it is for youth to see themselves reflected in a variety of professions, from construction workers and carpenters, to designers, planners, and architects. Where possible, the construction of energy-efficient and culturally-appropriate buildings and homes should use local labour.



Ouje' Bougoumou Village.
Photo credit: Douglas Cardinal Architect



Gingolx Community Hall
Photo credit: Patrick Stewart Architect

“What is the long game? Every time a young Indigenous person in their communities sees an Indigenous architect, it’s about role modeling. Role models are so important for communities. Every time we see non-Indigenous people come in to save the day, it’s great but it’s not building capacity.”

3.2 Energy-efficient buildings and homes

- » Energy-efficient buildings and homes meet the social, economic and cultural needs of the community and are built to last for future generations.

Although interviewees were familiar with and used the term energy-efficient, many interviewees suggested that energy-efficient homes and buildings are those that are durable, comfortable, affordable, and safe. Captured succinctly in the words of one interviewee, an energy-efficient home “is a house that my great, great grandchild will see.” Energy-efficient homes consider the way community members gather, they reduce the operation costs of the building, and they consider the Nation’s desire to honour the land and be environmental stewards.

“At the end of the day, one of the biggest pitches for sustainable building is one that doesn’t end up in the landfill, one that stands the test of time. The only way you are going to get that is if you construct a building that people fall in love with, take pride in, and is made from durable materials.”

- » Energy-efficient buildings and homes help First Nations address affordability challenges.

Interviewees noted that many of their communities, or the communities they work with, are facing affordability challenges. Because some First Nations communities do not have access to natural gas, they use electricity to heat their homes. Using electricity often results in utility bills that are unaffordable and unmanageable for residents on social assistance or disability. Many of the current homes on First Nations are poorly insulated, overcrowded, drafty, and overall, not built for the climate they are in. These compounding factors contribute to higher utility bills. Although studies suggest that the upfront cost of constructing energy-efficient buildings and homes may be incrementally higher than code-built homes, many interviewees stated that the pay off is worth it to address the affordability challenges their community members are facing²¹.

- » Energy-efficient buildings and homes lower dependence on fossil fuels and wood burning appliances.

Some First Nations in B.C. are remote, meaning they are not connected to the integrated grid in B.C. or they are connected to the grid but rely on other generation for back-up. These communities may be served by electricity, fossil fuels, power, renewable energy or a mix of these. Remote communities not only think about energy-efficiency in terms of cost but may seek to lower their dependency on fossil fuels. Energy-efficient buildings and homes that focus on heat retention, reduce the amount of fossil fuels needed to heat the structures.

Interviewees also noted that energy-efficient building and homes lower dependence on wood heat (wood burning appliances) which are the biggest contributors to mould and home loss by fires.

²¹ A cost study to explore the incremental capital costs of building to BC Energy Step code, versus the Building Code, can be found here: <http://energystepcode.ca/app/uploads/sites/257/2019/11/BC-Energy-Step-Code-Costing-Studies-Analysis-Rev1.pdf>

» Energy-efficient building and homes incorporate “place-based” thinking.

The importance of the land and climate, in the context of where one is building new construction, was highlighted by several interviewees. Place-based design encourages builders to consider the land and climate, as well as the materials themselves, and the origin of materials. This way of thinking encourages the use of local labour and materials and helps reduce both transport costs and environmental impacts.

» Energy-efficient building and homes consider passive design strategies.

The most commonly discussed topic related to energy-efficiency was the use of passive design strategies²². Using passive solar power, considering the building and site orientation and shape, designing the interior layout to optimize natural light, using appropriate insulating materials, and selecting triple or quadruple pane windows were all cited as important features to ensure air tightness in new buildings and homes. Some First Nations communities are bringing in external professionals to do blower-door tests that reveal airtightness of their new structures. Although passive design features are being considered, there are few First Nations who are deciding to pursue the full Passive House certification as it is costly.

“The amount of work and money it takes to seal a home is miniscule compared to how much energy is used to heat the home.”

» Building energy-efficient buildings and homes often requires own source revenue.

While some First Nations may be able to put financial resources towards new energy-efficient construction and training, smaller First Nations with less financial capacity find it difficult to gather the funds needed. Indeed many of the new construction projects discussed by interviewees were funded with own-source revenue (for example, the Doig River First Nation Community Building). One interviewee also noted that their nation is using provincial gaming revenue (a new revenue source announced in the TogetherBC Poverty Reduction Strategy) to fund new housing projects.

When it comes to energy-efficiency, interviewees shared that CMHC and ISC funding are not enough for constructing energy-efficient and culturally-appropriate buildings and homes. First Nations are encouraged by CMHC and ISC to find additional partners or use their own source revenue to make up the difference in costs.

²² The Passive House Standard uses rigorous criteria to ensure that energy efficiency in buildings is achieved by paying attention to the building envelope and to the locations' environmental and geographic conditions. While some interviewees expressed interest in building to the standard, most interviewees spoke to using passive design features which are not unique to the Passive House Standard. Many of the features are also part of the BC Step Code and Net Zero Program, which are Canadian specific programs, codes, and standards.

» The mandate to build more energy-efficiency buildings and homes can be found in a variety of plans and policies.

There are varying avenues and mechanisms through which First Nations are incorporating energy-efficiency thinking into new construction. The extent to which First Nations communities follow their plans and policies varies. Some interviewees shared how their decisions to move towards new energy-efficient and culturally-appropriate construction came out of strategic community planning. Other nations have language about energy-efficient new construction in their housing policies²³, construction policies, and energy plans. One interviewee noted that they have had success with incorporating energy-efficiency targets into their RFPs. Incorporating targets into RFPs helps to ensure professionals bidding on projects are well versed in energy-efficient technologies.

» Energy-efficient new construction is being led by First Nations who recognize that government solutions and funding are not working.

First Nations recognize that government solutions and funding are not going to resolve the current housing crisis. Current government funding programs do not offer capacity-building for energy-efficient new construction. As a result, many First Nations community members are seeking out new educational opportunities themselves. There are several First Nations Housing Managers who are leading the way by constructing energy-efficient and culturally-appropriate homes and building capacity in their own and neighboring communities.

Is a culturally-appropriate building or home energy-efficient? Is an energy-efficient building or home culturally-appropriate?

Most interviewees suggested that, yes, a building or home can be culturally-appropriate and energy efficient at the same time. Individuals mentioned that for many First Nations, being good stewards to the land and taking care of the environment are inherent desires of the community. One interviewee mentioned that it can be difficult to accommodate some of the cultural building design desires -- such as a skylight, that is necessary for people who want to burn inside the home -- and ensure the building still performs efficiently. However, it is still possible if the building envelope remains tight and occupants understand how to maintain the structure.

Several interviewees also mentioned that one of the important features of building energy-efficiently is constructing a home or building to match the geography and the climate that it is in, which First Nations have historically done since time immemorial. Due to historic and present day colonization, many First Nations are living in homes that have deteriorated because they were not built to withstand the climatic conditions in which they reside. Thus, a shift back to “place-based,” or bioregional design, aligns with the desire to build culturally-appropriate homes and buildings that are in tune with the natural world.

²³ For example, the Kitasoo Xai'xais First Nation created an energy-efficient housing policy. For more information on the policy, see the flyer created by Pinna Sustainability found here: https://www.fraserbasin.bc.ca/_Library/CCAQ_First_Nations_EnergySave/fnhes_kitasoo_energy_efficient_housing_policy_flyer.pdf.

3.3 Engaging with building codes and standards

- » The choice of building codes and standards and their compliance varies greatly across nations.

First Nations are variously following the National Building Code, the B.C. Building Code, the Energy-Step Code, neighboring municipalities codes, and/or their own codes/standards. It is up to each individual First Nation to decide what building code they wish to implement. One interviewee estimates there are more than a dozen First Nations bands who are enforcing the B.C. Building code through building by-laws or permit systems on-reserve. The efficacy of these by-laws, however, varies from community to community. The remaining First Nations without by-laws are required to do code compliance inspections for new construction, but again, compliance varies from nation to nation depending on their capacity to carry out the inspections themselves or access to external building inspectors. Unless the community is receiving funding from CMHC or ISC, there is no federally regulated requirement to support any code application or compliance.

Much like the mandate to build higher-performance buildings and homes, guidance around building codes/standards can be found in strategic plans, Comprehensive Community Plans (CCPs), energy plans, housing policies, procurement policies, and construction guides. Policies and guides, however, are not always followed.

Land tenure also plays a role in the building code followed by First Nations. Of the more than a dozen or so bands that do have bylaws in place (an estimate from an interviewee), many of them are governed under their own Land Code instead of the Indian Act. Some First

Nations (such as the Tk'emlúps te Secwépemc) are leasing out their land to non-community members. Leasing out the land requires mortgages from banks, which requires security. The bank requires assurance that anyone building on the leased land will be building up to code. Therefore, a building permit system is put in place.

Interviewees noted that many First Nations who have entered into Modern Day Treaty Agreements or Self-Government Agreements have also adopted some version of the B.C. Building Code, or a nearby municipality's code. The decision to implement bylaws has come from their own indication of need rather than outside influence.

The individual overseeing building standards varies from community to community. The Housing Manager, Band Manager, or Capital Projects Manager/Director were all mentioned as individuals who may take on this role. Depending on the project, architects, engineers, and/or contractors will also sign off on the project being up to code. If architects are involved in the project, there is an added layer of accountability as they must submit a Schedule C, B, and CP to sign off that the building is built up to code. However, architects are not typically involved in smaller projects, such as residential homes. Some First Nations hire external building inspectors, but inspectors can be difficult to access as well as expensive, depending on the community's location.

» Funding programs often dictate building code compliance but follow-up is inconsistent.

Interviewees shared that many of the new funding programs (through BC Housing and the National Housing Strategy) have energy-efficient targets to meet. While these targets are effective for promoting better quality homes that are up to code, the applications can be difficult to navigate and often require the assistance of external consultants.

Although provincial and federal governments cannot legally require First Nations to comply with a specific building code, as per their funding agreement, First Nations who receive funding for new construction from CMHC and ISC are, at minimum, required to follow the National Building Code. CMHC, however, only does construction progress inspections, not building inspections. Some First Nations have qualified building inspectors to do these inspections, while others do not, resulting in inconsistent quality of buildings and homes across First Nations. ISC is responsible for sending out their inspectors to ensure that projects are up to code. But interviewees stated this only happens approximately 50 percent of the time. As such, determining whether their homes and buildings are up to

code is often left up to the individual First Nations.

One interviewee noted that sometimes there are different standards that First Nations must manage if they are receiving funding from BC Housing and CMHC as both agencies have different energy-efficiency requirements. BC Housing usually requires Step Code 3 or Step Code 4 (which is close to Passive House or Net-Zero)²⁴. CMHC, being at the federal level, is concerned with GHG emissions. When applying for CMHC funding under the National Housing Co-Investment fund, First Nations communities must show how their project is reducing green house gas emissions beyond what is required in the National Building Code. Usually if the project is meeting Energy Step Code 3 or 4, it is also meeting CMHC requirements.

Interviewees noted that construction professionals and consultants working with First Nations are seeing a shift towards using the BC Building Code rather than the National Building Code, as people working in the construction industry are more familiar with the BC Building Code.

» Some First Nations are interested in developing their own building standards.

The BC Building Code was created without any First Nations involvement. One interviewee said that the BC Building code does not consider the conditions and the availability of resources in First Nations. Some interviewees commented that it is unfair to hold First Nations communities to codes or standards that were written without their input. They also raised the suggestion for First Nations in B.C. to develop their own codes/standards and/or that

they collaborate in developing regional codes/standards to be overseen by Tribal Councils²⁵.

Several interviewees noted that there are some First Nations already going beyond adopting or altering existing codes/standards and creating their own to meet the specific needs of their community, such as the Nuxalk Nation.

²⁴ Net-Zero Homes are up to 80% more energy efficient than typical new homes and use renewable energy systems to produce the remaining energy they need. More information on Net-Zero homes can be found here: <https://www.chba.ca/CHBA/BuyingNew/Net-Zero-Homes.aspx/>. Passive Housing is a third-party building standard, operated and implemented by Passive House Canada. For more information on Passive Housing, see "Active for more comfort: Passive House": https://www.passivehousecanada.com/downloads/iPHA_Brochure.pdf.

²⁵ Tribal Councils are Councils established by a number of First Nations with common interests who voluntarily join together to provide capacity development and/or program services to First Nations members. Examples of Tribal Councils in BC include: Naut'sa Mawt Tribal Council, Shushwap Nation Tribal Council, Nuu-chah-nulth Tribal Council, among others.

Guideline(s) for General Contractor Building Specifications, Nuxalk Nation

The Nuxalk Nation, located in Bella Coola, B.C., used building science and technology to create their own construction specifications booklet. The booklet was funded by BC Hydro and BC Housing, with RDH Building Science and Ecolighten Energy Solutions providing technical assistance²⁶.

These specifications were created to address the challenges of constructing, managing and maintaining a home in their community. Some specific challenges include managing the cost of new construction and the waste created when constructing, as well as eliminating future redesign costs. For example, the architectural costs of modifying homes for persons with disabilities or cognitive challenges.

The specification booklet states that all residential homes must comply with the BC Building Code and meet the Energuide 80 rating. All homes have features to compliment Sections 3.7 (Health Requirements) and 3.8 (Building Requirements for Persons with Disabilities) of the BC Building Code. The specifications also address building envelope, heating, ventilation and air conditioning systems, service water heating, lighting and electrical systems. Further, the booklet states that Nuxalk Construction shall supersede the Building code book of Canada. Compliance is demonstrated by providing the energy guide evaluation report.

The Nuxalk Nation also supported the development of the Building Specification for the Wet West Coast through the Coastal First Nations Great Bear Initiative.

» Some First Nations are applying voluntary rating systems to new construction.

Interviewees mentioned a variety of voluntary rating systems First Nations are applying to their new construction projects or thinking about applying in the future. While some First Nations are applying Passive Housing or Net-Zero (the most commonly referenced voluntary systems), other First Nations communities are just beginning to apply National Building Code standards. Several interviewees stated that First Nations are thinking about multiple voluntary rating systems (Passive House, Net Zero, Step Code 4-5, Green Building, etc.) to apply to new construction and are drawing from a variety of models to see what fits best with their projects. The choice of which

voluntary rating systems to apply is most often dependent on funding demands, and available funding, the Nation's capacity to manage the project, and access to building professionals.

A common sentiment expressed among interviewees was that the main goal of new projects should be to improve the quality of homes for the most people in a given community, even if that means not building to a certified standard (for example, Passive House Certification).

²⁶ RDH designed the conditioned crawl space specifications and EcoLighten designed the heating systems specifications.

3.4 Barriers to constructing culturally-appropriate and energy-efficient buildings and homes

- » **First Nations are struggling to find enough funding to complete energy-efficient and culturally-appropriate buildings and homes. In addition, some of the funding that is available has restrictive and prescriptive criteria.**

All interviewees expressed that there is not enough funding to support the implementation of energy-efficient and culturally-appropriate homes on-reserve. Projects always cost more than the funding available. The funding applications are burdensome as there are different applications and requirements for each program. Further, many First Nations are also not aware of the funding that is available to them.

Interviewees expressed that the funding received under Section 95 is insufficient to accommodate energy-efficient new construction. The program is geared towards social housing and there are restrictions to capital amounts on projects. Because the aim of Section 95 is to house the most people at the most affordable rent, there is no extra funding to build beyond the minimum code (National Building Code). CMHC encourages First Nations to find other funding partners if they want to meet energy-efficiency targets. In addition, funding limitations and restrictive criteria do not allow for some culturally-appropriate and energy-efficient features to be included in the design. For example, one interviewee mentioned that CMHC does not allow skylights to be included in designs. However, if community members wish to

smoke meat in their homes, a skylight is necessary to release the smoke and prevent mould.

CMHC funding policies are especially limiting for First Nations with Modern Day Treaties. Generally, First Nations applying for lower interest rate subsidy programs from CMHC need a Ministerial Loan Guarantee (MLG). However, Modern Day Treaty Nations are no longer able to access funding from ISC, preventing them from getting an MLG. Although CMHC has granted exceptions for some of these policies, interviewees stressed that updates are needed to ensure all First Nations can access the funding, regardless of Treaty status.

Many interviewees highlighted that housing funding does not cover infrastructure costs including water, waste, sewer, and electricity systems. First Nations must fill out separate applications for funding and infrastructure. As one interviewee explained, “you could have all the paperwork in place and the funding approved [from CMHC] but then you have to wait for funding from ISC for the infrastructure... it slows things down.”

“Big frustration is the funding, there should be a button that you press when you apply for funding from ISC and it sends the same information to all the programs to avoid application burn out. Housing managers and developers on-reserve are busy as hell. It is difficult finding the money for it and jumping through all the hoops. You need a full-time person to navigate all the applications.”

» **It is difficult to convince community members that building-energy efficient buildings and homes are worth the increased upfront capital investment. Community buy-in is not always assured.**

Several interviewees said it is difficult to convince community members that energy-efficient homes are worth it when there are so many competing interests in the community. Many community members understand that it is a good idea, but when it is up against other priorities, it does not always make the cut. At times, Chief and Council and band administration have to convince community members that the upfront capital costs are worth the long-term savings and environmental benefits. Even if there are individuals who are passionate about energy-efficiency, it is hard to

justify the cost of energy-efficient homes rather than a build that is cheaper and can house more people.

Energy-efficient homes also require changes to how people live and not everyone is ready to make those changes. One interviewee explained that teaching community members how to care for new homes and use less energy is just as important as the design and build of the structure. Sometimes the education piece can be a large hurdle for community members to get over.

» **Managing new constructions projects is a full-time job, and many First Nations do not have the administrative staff to manage these projects on top of their other work.**

Multiple interviewees expressed Housing Managers are not properly supported in carrying out a large number of responsibilities. Not only do Housing Managers oversee day-to-day housing operations (maintenance, rent collection, waitlists, etc.), they must also apply for funding and in some instances, manage ongoing construction projects. Interviewees

noted that there is limited funding to retain qualified staff, and not all Nations have Housing Managers. Although there is some funding through ISC around capacity and training to support people to be housing managers or builders, these programs are not widely shared or easy to access.

“Housing managers have a million things on their plate and energy-efficiency is a small piece of that. Unless you have someone who is really keen on that topic it can be hard to sustain work around that.”

» **There is a lack of skilled building professionals (both internally and externally) who are well-versed in energy-efficient design and construction.**

Many interviewees expressed the importance of working with reliable contractors for construction projects, but stated these contractors are difficult and expensive to hire in remote settings. In addition, interviewees noted that there are a limited number of contractors skilled in the application of energy-efficient building methods. One interviewee spoke specifically about the challenges of finding contractors familiar with energy-efficiency in Northern B.C.; the few individuals that have this training charge expensive rates.

Several interviewees expressed interest in hiring Energy Advisors²⁷ to support their projects but again, it is challenging and costly for remote First Nations to access these professionals.

» **There are First Nations in B.C. who do not have access to land on which to build housing.**

Despite the desire to build energy-efficient and culturally-appropriate homes, interviewees explained that many First Nations have run out of land on which to build. As a result, some First Nations have not built new homes in years. Through the Additions to Reserve Policy²⁸, First Nations can add property to existing reserve land. However, this can be costly and timely.

The current housing crisis cannot be separated from present and historical colonialism that removed and continues to displace First Nations from their traditional territories through the unlawful sale of land and in some cases, forceful relocation of communities and territories.

²⁷ Energy Advisors are third-party consultants who have been registered by Service Organizations licensed by Natural Resources Canada (NRCAN) to deliver NRCAN's EnerGuide Rating System (ERS), ENERGY STAR® for New Homes and R-2000 programs. An Energy Advisor can provide both energy modelling and airtightness testing. More information on Energy Advisors and how to access them can be found here: <https://energystepcode.ca/energy-advisors/>

²⁸ An Addition to Reserve adds land to existing reserve land of a First Nation or creates a new reserve for First Nations. More information on the Addition to Reserve policy can be found here: <https://www.aadnc-aandc.gc.ca/eng/1332267668918/1332267748447>

3.5 Factors contributing to the success of culturally-appropriate and energy-efficient buildings and homes

- » **Support from Chief and Council and community members is essential to successful new construction projects.**

Multiple interviewees highlighted the importance of having community members on board with projects from the beginning, especially new housing builds. Not only does community engagement often lead to community members feeling happier in their homes, but they better understand how to maintain their homes and feel a sense of pride living in them.

“The community planning work is the essential ingredient to all the projects we work on.”

- » **Creating partnerships helps to leverage funding and build capacity in the community.**

Several interviewees noted that partnerships are key to implementing energy-efficient and culturally-appropriate homes and buildings on reserve. Working with multiple government partners, such as ISC, CMHC, BC Housing, other funding bodies (such as the Vancouver Foundation and Real Estate Foundation) as well as with colleges, industry and trades, and suppliers (such as BC Hydro), not only helps nations access funding, but these partnerships can also build capacity in the community. Most notably, interviewees mentioned that partnerships with colleges and universities can lead to employment training opportunities for community members and present future career paths for youth.

Partnerships in Action: T'Sou-ke Centre for Sustainability Housing Innovation

CleanTech Community Gateway (CTCG) and T'Sou-ke First Nation are partnering to develop innovative housing solutions for Indigenous communities in B.C. T'Sou-ke First Nation is leading the project through their Centre for Sustainability. The project has two aims: first, to support capacity building with participating communities and second, to test various technologies for energy-efficient housing.

There are multiple funding partners supporting this project, including the Real Estate Foundation of BC, Vancouver Foundation, and Mitacs. The project's sustained funding has enabled CTCG and T'Sou-ke First Nation to partner with six First

Nations without cost for participation²⁹. The project also received funding from CMHC's National Housing Strategy Solutions Lab to document the building and learning process so that other Indigenous communities can learn through their experience.

Through a three Phase process – initiate, incubate, and innovate – the Housing Innovation Project is working with the partnering communities from the ground up to implement clean technology solutions for affordable, energy-efficient and culturally appropriate housing. Two other offshoots of the project include a framework for a First Nations National Building Code and an Indigenous specific training program certification to build energy-efficient homes and buildings and renewable energy.

The Housing Innovation project incorporates multiple success factors highlighted by interviewees, including sustained funding through multiple partnerships and a commitment to capacity building.

The project hopes to create a successful housing model for other First Nations to adapt and scale to their needs, with the overall goal of constructing better homes in Indigenous communities across B.C. and Canada.

» Using local labour and materials reduces building costs and increases capacity.

Multiple interviewees suggested that moving forward, the model for all new construction projects in First Nations should be one that uses local labour and resources. This model, if sustained long-term, can help reduce construction costs, build capacity in the community through employment and skills training, and reduce the environmental impacts of transporting materials to remote First Nations.

Success Story: Nuxalk Nation Construction Program

In 2015, the Nuxalk Nation started an apprenticeship program for interested community members. The community-based program matches Nuxalk apprentices with advanced skilled workers. Through the program, members of the Nuxalk Nation are now building their own homes with their own resources.

The apprenticeship program was initiated through Nuxalk education, with support from Chief and Council, parents, family members, and the special projects and trades department at Camosun College in Victoria. Camosun College coordinators worked with the Ministry of Advanced Education to financially support the program.

The program was designed to assist students who need additional support, as well as promote students who are advancing rapidly. Through the program, there are opportunities for students to learn other trades, such as electrical work, joinery, plumbing and painting. The community based program works with students to identify and build on their strengths, as well as identify areas where greater support and development are needed.

²⁹ The Housing Innovation Project is supporting T'Sou-ke First Nation, Tsartlip First Nation, Tseycum First Nation, Tsawout First Nation, Aq'am First Nation, and Tla-o-qui-aht First Nation.

Since the apprenticeship program began, completed projects have included new homes, a fisheries office, education building, chief's building, and a new restaurant. Using the Nation's own source labour has not only reduced construction costs and improved the construction quality, but the apprenticeship program has created a sense of pride and ownership over the new buildings and homes in the community. Rather than having outsiders come in with outside solutions, the Nuxalk Nation is using their own people to create their own solutions.

More information on the Nuxalk Nation's carpentry apprenticeship program can be found [here](#).



Nuxalk Tiny Homes, built by carpentry apprentices. Photo credit: The Canadian Press

“By returning construction and design of homes to the people who live in the community, the housing program is ensuring the right places are being built. The buildings are equipped with solar panels, built to withstand the local climate, and built by members of the Nuxalk Nation.”

(Coast Funds, 2018)

» **Involving building and construction professionals in the design phase (i.e. architects and building scientists) supports the implementation of energy-efficient and culturally-appropriate buildings and homes.**

Several interviewees stated that working with architects and building scientists helps support the implementation of culturally-appropriate and energy-efficient new construction. Although the upfront costs can be expensive, good design helps alleviate potential construction issues and ensures the buildings are up to code. Further, building scientists are trained in 3D computer modelling that enables them to create various scenarios to inform the best design for the geographic and climatic area resulting in tighter building envelopes.

Funding Highlight: Indigenous Homes Innovation Initiative

A funding program supporting Indigenous housing projects from idea, to design, to implementation is the Indigenous Homes Innovation Initiative (IHII). Funded through Impact Canada, IHII aims to find and support Indigenous housing innovators with housing ideas for rural, urban, or remote Indigenous communities. Applicants must introduce new ideas, designs, and building techniques for effective, sustainable or culturally inspired living spaces for Indigenous peoples.

As part of the “Accelerator Period,” successful applicants receive mentoring support from Indigenous architects and other building professionals to refine their ideas into actionable projects. The fund provides up to \$350,000 (depending on the size of the project) to support pre-build planning and technical support. Innovators spend up to 18 months working with industry experts. Once the Accelerator period is finished and innovators have successfully demonstrated their proposals are ready for implementation, they receive implementation funding (up to \$2 million).

Several interviewees highlighted that more funding opportunities which support the idea and design phase, such as IHII, are needed to support the implementation of energy-efficient and culturally-appropriate new construction in First Nations communities.

The names of the 24 successful innovators (four of which are from B.C.) can be found [here](#).

» **Individuals who are passionate about culturally-appropriate and energy-efficient construction are driving this work in First Nations.**

Multiple interviewees said energy-efficient new construction projects are often initiated by passionate individuals in the community. They suggested there needs to be a driver/champion in the community who is willing and able to tackle these types of projects. Although some First Nations are working with housing developers and/or consultants, ideally there is someone in the community leading the project and engaging community members.

04.

Recommendations

This section includes recommendations informed by background research and suggestions from interviewees related to policy, programming, and funding improvements.



While there is work being done at multiple levels of government to support the implementation of culturally-appropriate and energy-efficient buildings and homes in First Nations communities in B.C., greater effort and attention are needed to further support them. Explained below are **nine recommendations** to support the implementation of culturally-appropriate and energy-efficient new construction in First Nations across B.C.

1. Collaborate with BC Housing, the Canadian Housing and Mortgage Corporation (CMHC), Indigenous Services Canada, and the Housing and Infrastructure Council (HIC) to create a one-stop shop for funding applications.

All interviewees expressed that the largest barrier to implementing culturally-appropriate and energy-efficient buildings and homes is funding. The funding applications are complicated to navigate, have different requirements and reporting structures, and often only support a small portion of a project. Additionally, some sources of funding are “pop-up,” one-time initiatives and programs, rather than sustained funding. For example, ten year funding commitments would allow First Nations to plan for and invest in larger housing projects, rather than just building or fixing a few homes at a time, which is what many nations are currently doing with existing funding models.

The provincial and federal government should work with Indigenous peoples and organizations to design a new funding model that is easy to apply for and navigate (for example, one application that is sent to all funding bodies) includes resources and supporting information, and is a stand-alone entity – as opposed to being embedded within a larger government initiative (such as the National Housing Strategy).

2. Support the creation of a First Nations Energy-Efficient Homes Certification and subsidize voluntary certification costs for First Nations.

Currently, there are no voluntary energy-efficient certifications that incorporate Indigenous knowledge and expertise. Multiple interviewees expressed interest in creating a First Nations Energy-Efficient Homes Certification and noted this could be an area the provincial government could support. The First Nations Housing Building Officers Association (FNHBOA) could be an organization the Province partners with to support this work.

Other First Nations communities are interested in some of the existing voluntary certifications (such as Passive Housing) but current funding programs do not cover certification costs. Offering the certification costs at a lower rate or providing subsidies to First Nations who are interested in achieving these standards is one way to make these certifications more attainable.



Nanaimo Aboriginal Centre Passive House. Photo Credit: Passive House Canada.

3. Support First Nations to access training opportunities for their community members.

There is a desire from First Nations to lead new construction projects from start to finish. Nations want to build and manage their own homes and have control of their assets. Some First Nations are requesting energy-efficient housing training for their members, as well as training for housing management, development, and procurement. Some potential training programs that were highlighted by interviewees included:

- Housing Manager (Vancouver Island University)
- Building Inspector (Vancouver Island University)
- Trade skills training (construction, carpentry, etc.)
- Building Science Technology (Passive House Training at British Columbia Institute of Technology (BCIT))
- Energy Advisor Training

Supporting First Nations to partner with trade schools, colleges, and universities can lead to employment and training opportunities for community members and present career paths for youth.

While some individuals can travel for training, in-community training must also be supported to alleviate travel barriers. Prior to COVID-19, the Fraser Basin Council organized in-community trainings on air sealing for new construction. Some communities, such as the Nuxalk Nation have created their own trades programs, enabling members to stay in their community and still receive education. Initiatives such as these should be supported and expanded upon.

4. Provide support to educate community members on energy-efficiency and home maintenance.

Supporting First Nations to educate community members on caring for their homes can help improve the homes performance and longevity. An existing provincial program that could be expanded to include education on home maintenance and energy-efficiency is the CleanBC Indigenous Community Energy Coach Program. Increasing the role of the Indigenous Community Energy Coach (ICEC) as well as the number of coaches available to communities could assist in increasing the level of knowledge in nations to facilitate further energy-efficiency work related to new construction. Working with the coach, staff members can learn more about energy-efficiency and how it can be incorporated into the planning of infrastructure projects. This knowledge can then be shared with community members.

Educating community members about their homes can create a culture of knowledge and care about home performance. It is important that any education initiatives are not driven by outsiders. Rather, community education should be led by energy-efficiency community champions.

5. Provide support to trades professionals on how to install energy-efficient technology.

For many First Nations, it is difficult to find building professionals to install energy-efficient technology. The Provincial government, in partnership with BC Hydro, could support basic training on some of these technologies to increase the supply of skilled contractors and reduce installation costs. As one interviewee noted, it is often not the technology itself that is expensive, but the installation costs.

6. Improve First Nations access to Certified Energy Advisors.

Certified Energy Advisors can conduct home energy audits and blower-door tests on existing and new homes. Once completed, the test provides an indication of energy performance. While some First Nations are aware of the services an Energy Advisor provides, accessing one can be difficult. This is especially true for smaller, remote First Nations. Nations would benefit from having financial support to hire Certified Energy Advisors, as well as having access to a list of Certified Energy Advisors with experience working with First Nations communities.

To promote capacity building, the Province could also collaborate with National Resources Canada (NRCAN) to support Indigenous people who are interested in energy-efficiency to take the Energy Advisor training. That way, in-community skills are developed and could be shared with neighboring Nations.

7. Create a B.C. First Nations Building Code/Standard Inventory.

There is little information available regarding the building codes and standards First Nations are following. Multiple interviewees expressed that they are interested in knowing the building codes and standards other First Nations are following and how they are implementing them. A building code and standard inventory would make this information easily accessible to First Nations, and it would allow the province to inform and include First Nations when changes are being made to the provincial codes they are following.



Heiltsuk Tiny Homes. Photo Credit: Provided by Heiltsuk Nation.

8. Promote internal collaboration between provincial ministries.

There are multiple provincial ministries with a potential role to play in supporting culturally-appropriate and energy-efficient housing on reserves. For example, the Ministry of Municipal Affairs and Housing (MMAH), the Ministry of Energy, Mines, and Petroleum Resources (MEMPR), and the Ministry of Indigenous Relations and Reconciliation (IRR).

From the perspective of interviewees, much of the work that is happening between government ministries appears to be siloed. For example, both BC Housing and MEMPR are supporting First Nations with energy-efficient infrastructure, BC Housing through the Building BC: Indigenous Housing Fund, and MEMPR through the CleanBC Remote Community Energy Strategy (RCES). To date, there have not been conversations between BC Housing and MEMPR as to how these two initiatives could align some of their work.

Moving forward, there is opportunity for increased collaboration between provincial ministries to support the implementation of culturally-appropriate and energy-efficient new construction. Increased collaboration could also help with consolidating engagement and funding efforts. To illustrate, updates to the BC Building Code, led by MMAH, could be shared with First Nations who MEMPR and BC Housing have existing relationships with. Additionally, MEMPR could collaborate with BC Housing to organize energy-efficient skills training to First Nations receiving funding through the BuildingBC: Indigenous Housing Fund.

9. Support First Nations mentorship networks and communities of practice to share successes and learn from one another.

As highlighted throughout the report, there are many First Nations across the province that have completed or are in the process of developing innovative new construction projects in their communities. Their accomplishments should be shared and celebrated. The provincial government should support the networks that already exist (such as the BC First Nation Housing Mentorship Program) and look for other opportunities to share success stories and support peer learning and networking. The provincial government could support with financial and administrative resources, but the networks themselves must be Indigenous led.

05.

Looking Forward:

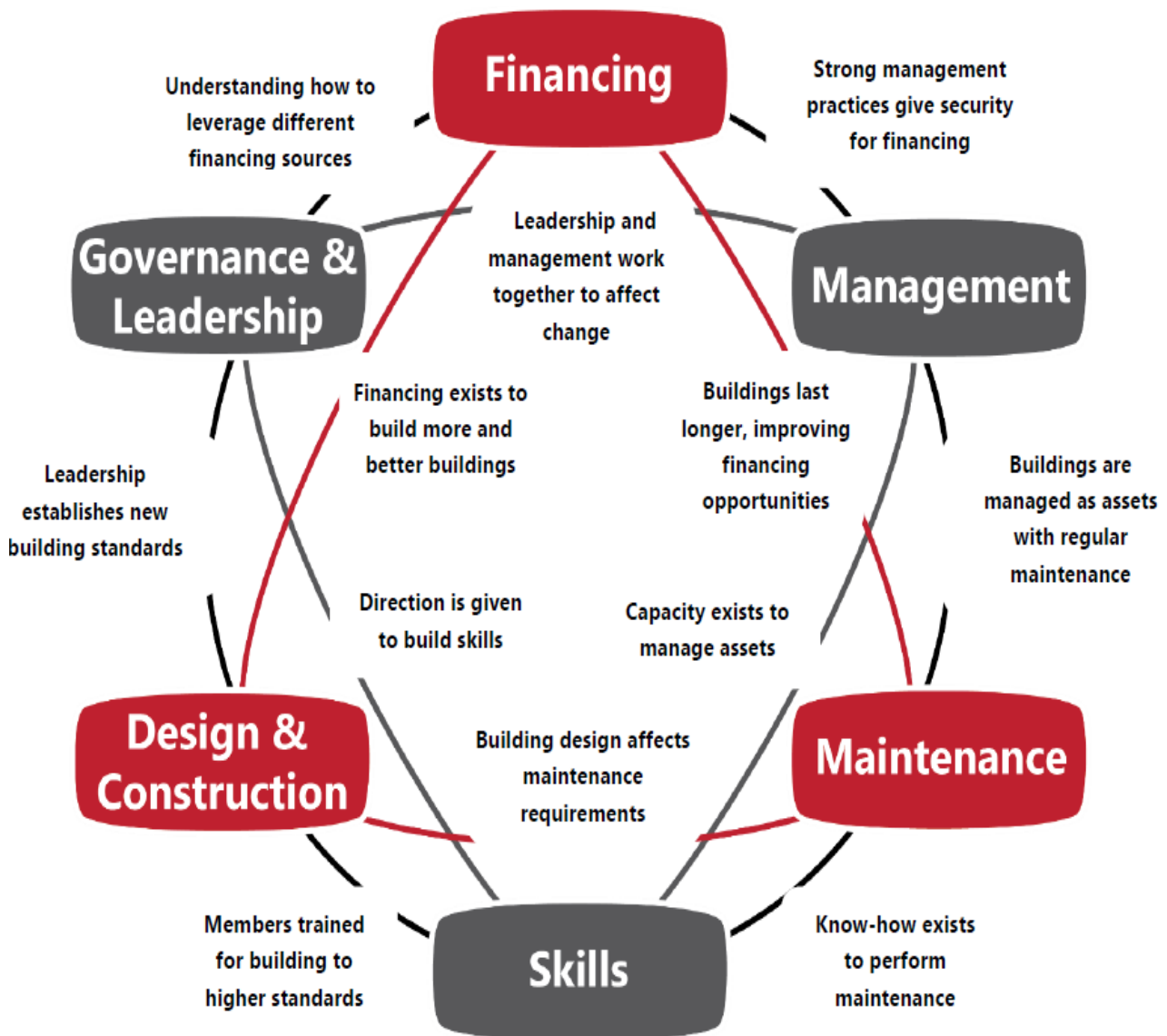
A Shift to Systems Thinking



An Enabling Environment for Housing

The “Bringing it Home” housing initiative led by Indigenous Clean Energy (ICE) proposes an Indigenous energy-efficient enabling environment is necessary to implement energy efficiency initiatives in Indigenous communities across Canada. ICE (2019) describes enabling environments as “the interconnected structures, policies, and practices that support communities in moving projects forward efficiently and with the maximum benefit to the community.” As part of this enabling environment, two subsystems exist. Subsystem 1 – Energy Efficiency Capacity – includes skills, management, and governance and leadership, and Subsystem 2 – Energy Efficiency Capital – includes financing, design and construction and maintenance. For systemic change to occur, all components of the enabling environment and their linkages must be present and functioning (ICE, 2019). The diagram below illustrates the linkages between the subsystems.

Figure 3: Indigenous Energy-Efficiency Enabling Environment (ICE, 2019)





Nuxalk Nation Tiny Homes. Photo Credit: Emilee Gilpin, via National Observer.

To achieve significant improvements in First Nations housing and infrastructure in B.C., all the components within each subsystem must be addressed. Many of the barriers First Nations are facing when implementing culturally-appropriate and energy-efficient new construction are due to missing linkages between the various subsystems. The current on-reserve housing system has major gaps. To quote one interviewee, “the on-reserve housing system is broken.”

The recommendations provided in this report address some components of the subsystems – for example, financing, skills, design and construction, and maintenance—but they are far from exhaustive. The recommendations do not directly speak to governance and leadership or management. However, conversations related to those components are currently being led by the First Nations Housing and Infrastructure Council (HIC) whose mandate is to create a First Nations controlled housing and infrastructure authority. Thus, the recommendations offered in this report sit alongside the larger call from Indigenous communities, organizations, and allies for systemic, structural change to improve Indigenous housing across Canada.

Many of the structures, policies, and practices that were meant to support First Nations on-reserve housing, are failing, largely because they were developed without the input of First Nations people. The Indigenous led-housing initiative described above and the success stories appearing throughout the report reveal how First Nations are innovatively solving their housing challenges. The time for governments, organizations, and allies to listen and support First Nations moving forward to lead energy-efficient and culturally-appropriate construction in their communities is now.

“Turn housing over to First Nations so they can make their own choices.”

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Appendix

A. List of Interviewees

First Nations Community Members and/or Band Staff

- **Adam Kantakis**, Director of Capital Projects & Housing, Tsay Keh Dene Nation
- **Andrew Moore**, Special Projects Manager, T'sou-ke First Nation
- **Leo Lawson**, Capital Projects Manager, Heiltsuk First Nation
- **Richard Hall**, former Housing Manager, Nuxalk Nation
- **Shona Wilson**, Band Manager, Doig River First Nation
- **Tom Laviolette**, Director of Infrastructure, Public Works & Housing, Lil'wat First Nation

Government

- **Connie Davis**, Indigenous and Northern Housing Solutions, Canadian Housing and Mortgage Corporation (CMHC)
- **Michael Sadler**, Director of Indigenous Relations, BC Housing

Organizations

- **Eliana Chia**, Program Lead, Climate & Energy Resilience, Fraser Basin Council (FBC)
- **Jim Munroe**, Building Inspector, First Nations National Building Officers Association (FNNBOA)
- **Pat Caraher**, Energy & Sustainability Specialist, Aboriginal Housing Management Association (AHMA)
- **Pierre Iachetti**, Chief Operating Officer, CleanTech Community Gateway

Building Professionals

- **Colin Doylend**, Director of Partnerships, Nexii Building Solutions
- **Lindsay Monk**, Manager of Development, M'akola Development Services
- **Mark Thorvaldson**, Planner, Gwaii Planning
- **M.K. Anand**, Engineering Services Manager, Community Power
- **Peter Hildebrand**, Architect, Iredale Architecture
- **Tracy Rockwell**, Director, TD Rockwell & Associates

Academia

- **Anthony Persaud**, Lead Researcher for Indigenous Home-Lands, EcoTrust Canada
- **David Fortin**, Associate Professor, School of Architecture, Laurentian University
- **Sylvia Olsen**, On-Reserve Housing Researcher, Advisor for First Nations Housing and Infrastructure Council (HIC)

B. Interview Guide

Opening:

Thank the interviewee for their time. Let them know the interview will take 45 min to an hour. Ask if it is okay to use their name or if they would like to remain anonymous. Let the interviewee know how the information will be used. If interviewing First Nations, let them know that any information about their Nation that is used in the report will be sent back for verification.

Project context:

I am a graduate student enrolled in the University of British Columbia's Sustainability Scholars Program and I have been hired by the Province of BC and BC Hydro to conduct research on energy-efficient and culturally-appropriate buildings in First Nations communities. This aim of this project is to identify opportunities for strengthening policies and programs to support new construction that is culturally-appropriate and energy-efficient in First Nations communities across BC. Although the project team recognizes the importance of better understanding how these features relate to existing buildings on reserve, this research is focused on new buildings. This research will inform the work of the Electricity and Alternative Energy Division within BC Ministry of Energy, Mines, and Petroleum Resources as well as BC Hydro as they support First Nation communities with the implementation of high-performance homes and buildings on reserve.

Include brief note on why the interviewee has been selected [fill this in prior to the interview]:

Semi-structured interview questions [interview questions will be tailored to each interviewee, but these questions give the general direction and the topics of the questions that will be asked]:

1. Please share a bit about yourself and what you would consider your area of expertise to be in relation to energy-efficient and culturally appropriate construction in First Nation communities.
2. How are housing matters governed in your community or the communities you work in? What is the process for identifying new housing needs?
3. From your experience, what is the process for building new construction in your community or the communities you have worked in? (adjust this question depending on interviewee)
 - a. At which point is funding secured? Where does this funding come from?
 - b. How are contractors sourced? Is it a request for proposal (RFP) process?
 - c. Are specifications/requirements related to cultural needs/preferences and energy-efficiency included in the RFPs? If so, where are those specifications/requirements drawn from?
 - d. Who usually manages the contractors and who verifies that the contractor's work has met the community's requirements?
4. What energy-efficient new construction have you supported or are you currently supporting?
 - a. What features contribute to the energy-efficiency of the project? (ventilation, insulation, materials, etc.)
 - b. What funding or incentives have you accessed, or do you hope to access to support new on-reserve construction in achieving higher energy performance standards?
 - c. How was(were) this(these) project(s) funded? (Provincially, federally, the First Nation, Community Organizations, combination, etc.)

5. What culturally-appropriate or culturally-relevant new construction have you supported or are you currently supporting?
 - a. What features make this project(s) culturally-appropriate? (design, layout, function, demographics it serves, etc.)
 - b. What funding or incentives have you accessed, or do you hope to access to support culturally-appropriate design?
 - c. How was(were) this(these) project(s) funded? (Provincially, federally, the First Nation, Community Organizations, combination, etc.)
 - d. How do you determine what is culturally-appropriate/relevant?
6. Of the projects you have led or supported, or more generally from your experience, what building codes and standards have you seen developed or followed for new construction in communities? (for example, BC Building Code, BC Energy Step Code, National Building Code, Nations' own standards)
 - a. What is the rationale for developing or choosing building codes standards to apply? (Requirements from the funder (e.g. CMHC), cost, available expertise, etc.)
 - b. How are the standards regulated and implemented on reserve? (For example, through Housing Policies, do they inspect for compliance with codes and standards? How?)
 - c. Who oversees housing standards? (for example, Chief and Council, Housing Authority, etc.)
 - d. Do you know of or have you worked with communities who developed and implemented their own building standards?
7. Have you personally worked on or heard of projects where First Nations are applying any of the existing voluntary rating systems to their new housing developments? (such as LEED, EnergyStar, R-2000, Net Zero Energy (Ready) or Passive House)
 - a. Again, what would be the rationale for choosing one program over the other?
8. In your opinion, what is needed to support the broad uptake of codes and standards that focus on the overall performance and quality of homes? (such as the Energy Step Code)
9. On the projects you have supported, or generally from your experience, what are some of the main barriers First Nations face when getting new energy-efficient and culturally appropriate construction off the ground?
10. What has contributed most to the success of the projects you have worked on? (local resources & skills, funding models, community support, etc.)
11. What are some of the big lessons learned in relation to building standards in your work? (was dealing with standards frustrating?)
12. What has been the response from community members after these new construction projects are completed?
13. What programs/policies/funding are needed to be able to support these types of projects in First Nations across BC?
14. Do you have suggestions for other communities I should speak to about this topic? (Ask if they would be willing to connect me)
15. Is there anything else that you feel is relevant to this research project or more generally, that I should know about energy-efficient and culturally appropriate housing in First Nation communities?