



CANADIAN CLIMATE INSTITUTE
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Recherche autochtone

BEYOND SUSTAINABILITY

The Power of Indigenous
Healthy Energy Homes

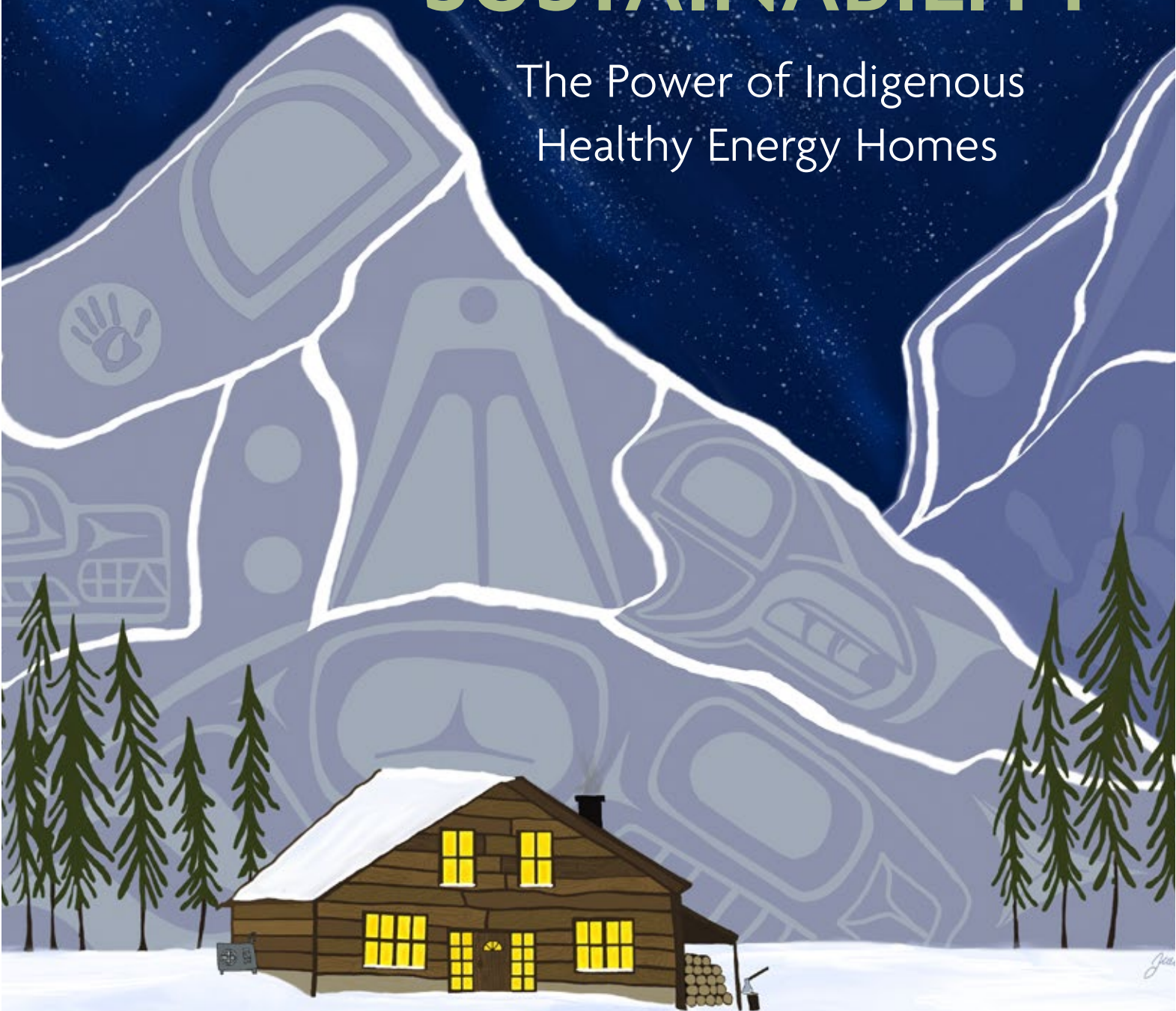


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There are aspects of the authors' backgrounds that strengthen this report, as well as gaps that may limit their insights. We acknowledge that systemic injustices and inequities stemming from historical colonization and ongoing discrimination have positioned certain people and communities at greater risk of physical, social, and economic impacts from climate change and climate policy. This includes Black, Indigenous, and people of color, lower-income people, 2SLGBTQIA+ people, people with disabilities, and others. These groups and their experiences are often not adequately represented in climate policy development and implementation.

Executive summary

This scoping paper explores the evidence linking Indigenous housing and health, positioning Healthy Energy Homes as an important policy approach for addressing health inequities experienced by Indigenous communities, building climate resilience, and reducing emissions.



We explore the concept of a Healthy Energy Home and provide insights drawn from data and dialogue on how Canada can improve Indigenous health outcomes by increasing access to energy efficient housing through policy. This scoping paper lays the groundwork for an Expert Gathering in the fall of 2024, where we will discuss feedback on preliminary results and determine future research outputs. This work identifies, amplifies, and is informed by the voices of people who have been actively involved in leadership and action on Indigenous health, energy, and housing.

Building on Indigenous Clean Energy's project proposal that *Climate Change is a Health Issue - Clean Energy is the Solution*, Indigenous Clean Energy and the Climate Institute work in partnership to provide analysis that explores:

- how efficient, clean energy in Indigenous housing has the potential to contribute to a dramatic reduction in exposure to risks in health, improve Indigenous wellness, and contribute to climate change resilience;
- policy recommendations for delivering on this potential.

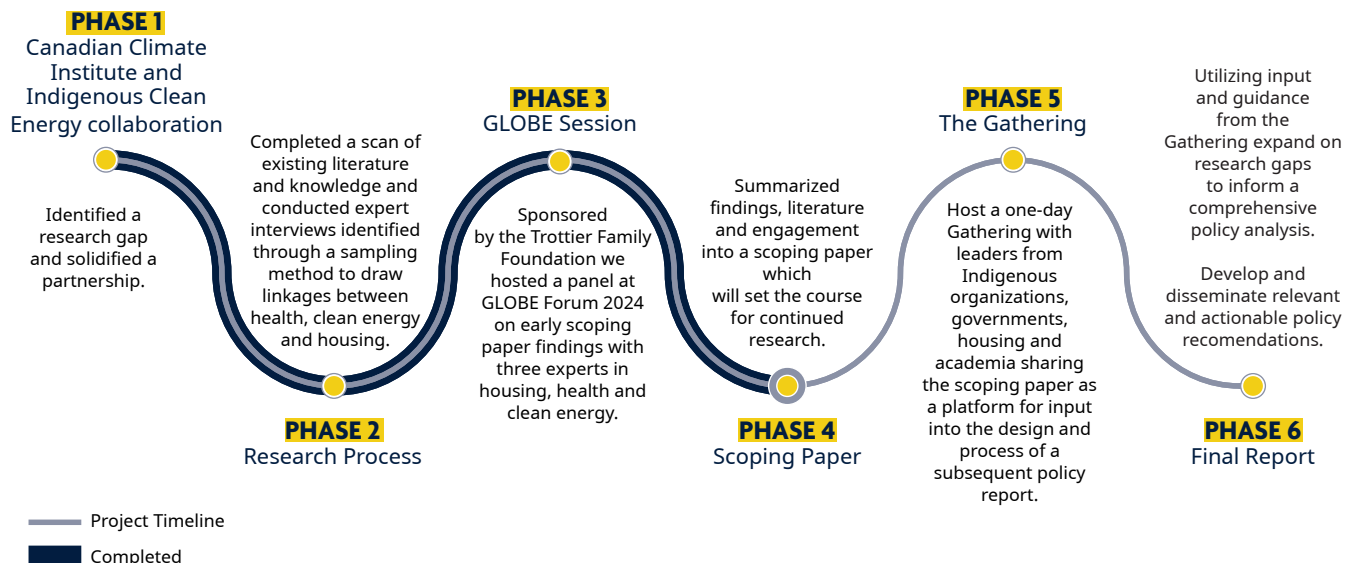
Key points:

1. Current Indigenous housing generally contributes to poor health outcomes;
2. Healthy Energy Homes can be a part of the solution by:
 - a. Addressing housing challenges causing poor health outcomes;
 - b. Creating nested and holistic benefits;
 - c. Reducing healthcare costs;
 - d. Powering overall emissions reductions;
 - e. Improving affordability by saving community members money;
 - f. Better aligning with Indigenous worldviews and reconciliation;
3. Unlocking these nested benefits requires a new, national approach to address Indigenous housing on scale.

This scoping paper serves as a foundation to our larger work on Healthy Energy Homes. The broader work will delve deeper into this topic, assess policy barriers to widespread adoption of Healthy Energy Homes, and provide recommendations for addressing these barriers. We expect our final report to launch in 2025 (Figure 1). The intersections of health, energy efficiency, and housing have not been explored enough in the Canadian context—this research intends to advance the ways that the intersection of this work can move the dial on building Healthy Energy Homes in Indigenous communities.

FIGURE 1:

Healthy energy homes project timeline



Introduction

In 2018, Hailzaqv Nation installed its first 20 heat pump systems. The home occupants saw immediate impacts with some saving up to \$250 per month on heating. For Susan Paul, a recipient of one of the new systems, the impact was even deeper—her children’s runny noses and coughs disappeared (Ecotrust Canada 2018).

This is just one example of something Indigenous communities have known and been stating for many years—poor housing conditions, which include limited access to safe, affordable, and healthy housing, are a main contributing factor to poor health outcomes, such as respiratory and skin infections, in Indigenous communities (Priest et al. 2012). For example, Inuit Tapaririit Kanatami (ITK) has argued that investing in housing is investing in the ability of Inuit to be self-sufficient, and improved housing outcomes will invariably improve Inuit health and socio-economic outcomes (Inuit Nunangat Housing Strategy 2019).

Canada has one of the highest standards of living in the world, yet Indigenous communities in Canada lag significantly behind. In 2016, Canada ranked 12th internationally on the [United Nations Human Development Index](#).¹ If Indigenous communities in Canada were ranked separately on the same human development factors, they would have only ranked 52nd (Government of Canada 2020). According to the development index, one of the widest gaps between Indigenous and non-Indigenous communities is the differences in health outcomes.

This discrepancy is just as strong when it comes to housing. In 2021, nearly one in six (16.4 per cent) Indigenous people were living in homes in need of major repairs: a proportion of three times higher than non-Indigenous people (Statistics Canada 2022; Malone 2022).

¹ The United Nations Human Development Index measures “the average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living.”

HEALTHY ENERGY HOMES

For simplicity, we call homes that are energy efficient, climate resilient, and support the well-being of inhabitants, healthy energy homes. This term is not intended to create a new standard for assessing homes—like Net-Zero Energy Homes or Passive House certifications. Rather, it conveys a different concept of housing, one that is centered on the human and community dimensions of housing, energy efficiency, cultural values, and greenhouse gas reduction. In effect, Healthy Energy Homes are the approach we suggest to ensure energy efficiency for deep retrofits and new builds: an approach that supports health outcomes, overall well-being, and emissions reduction.

To help address poor housing and support better health, Indigenous communities are calling on governments to address the inadequate housing that currently exists within, and is available to, Indigenous communities (Assembly of First Nations 2023; Assembly of First Nations 2024; Métis National Council 2023; Inuit Tapiriit Kanatami 2016). They are pushing for homes and policies that are energy efficient, climate resilient, and that support the well-being of inhabitants. For example, in response to the recent Federal Budget 2024, the Assembly of First Nations identified the failure of the budget to address long standing infrastructure gaps in housing (Assembly of First Nations 2024). Inuit Tapiriit Kanatami expressed disappointment over the absence of funding to eliminate tuberculosis by 2030 (Inuit Tapiriit Kanatami 2024), which can be linked to poor quality housing (Robson 2008).

To date, discussions have typically treated these various Indigenous housing needs as separate and sometimes competing challenges, and governments often try to solve these challenges with a siloed approach. For instance, building an energy efficient home is often viewed as more expensive, which can be counter to the need to build more homes for less money. However, as is true in most Indigenous worldviews, everything is connected. In order to create significant, meaningful change, the challenges must be viewed holistically.

In particular, the intersections of health, energy efficiency, clean energy, and housing are not well explored in the Canadian landscape. This scoping paper lays the foundation for how these challenges are closely linked to each other and how, by building Healthy Energy Homes, important nested benefits can be created for Indigenous people, communities, and governments.

Research methods

This paper addresses a research gap identified by Indigenous Clean Energy, a co-author of the scoping paper alongside the Canadian Climate Institute, through work they do to accelerate First Nations, Inuit, and Métis participation in clean energy projects from coast to coast to coast. The research uses a decolonizing methodology and a two-eyed seeing approach, by applying Indigenous research methodologies through the principle of Storywork, which recognizes and affirms knowledge and expertise in narrative and story (Battiste 2000; Smith 2000; Archibald 2010; Smith et al. 2019).

Decolonial approaches are rooted in Indigenous values, philosophies, and knowledge systems, which consider more than just empirical western data and methods as knowledge (Smith 2000; Nakashima et al. 2012). This paper is informed by a literature review of over 100 peer-reviewed sources, news articles, and media analysis. All sources were scanned to identify Indigenous-authored or -led sources which were used, as much as possible, in the analysis of this scoping report.

More importantly, this work is supported by semi-structured interviews with 11 subject matter experts identified through a snowball sampling method to support Storywork. Finally the report is peer-reviewed by three experts in the field, which creates space for lived knowledge, an intersectional lens, experience, and observations that are often left out of research in this area.

A sled is hooked up to a snow mobile on the ice near Inukjuak, Quebec. Thursday, May 12, 2022. THE CANADIAN PRESS/Adrian Wyld



An Indigenous girl plays inside a teepee at a young bush camp taught by rangers which teaches survival skills in the northern Ontario First Nations reserve in Attawapiskat, Ont., on Wednesday, April 20, 2016. THE CANADIAN PRESS/Nathan Denette

Context: Housing and Indigenous communities in Canada



To understand why healthy energy homes can help address health outcomes (and can result in other nested benefits) in Indigenous communities, it is crucial to first understand the history of dispossession that Indigenous communities have faced for generations, and continue to face today (Thistle 2017).

For example, forced relocations took place under the Indian Act, under High Arctic relocations, and under Métis Scrip, which forced many Indigenous people from their home communities (MacMath and Hall 2018; Madwar 2018; Muzyka 2019; Nightingale and Richmond 2021; Thistle 2017). Today, many First Nations, Inuit, and Métis community members are often forced to travel great distances to access “health, education, legal, and government services... and arrive to face racism, discrimination, lack of knowledge of services, and culture shock” (Thistle 2017). As one community member from the Nehiyawak and Dene Nations explains, “This housing crisis isn’t just about building better homes, it goes back...there is a history to it” (Dembicki 2020).

Generations of colonial policies led to the destruction of traditional housing such as wigwams, teepees, longhouses, kekulis, pit houses, igloos, sod houses, big houses, and other styles of architecture used by Indigenous Peoples (Querengesser 2018). These housing designs were strategic, appropriate for the land and environment they were built in, and responsive to the cultural needs of specific communities. For over 150 years, Indigenous communities experienced trauma from “colonial land theft, broken treaties, and racist policies like the Indian Act” which led to the forced removal, relocation, and



Lawrence Shonias works on repairing a home on the Gull Bay First Nation near Gull Bay, Ont, approximately 180 kilometres north of Thunder Bay, Tuesday, Nov. 8, 2005. (CP PHOTO/Adrian Wyld)

dispossession of Indigenous Peoples from their traditional territories, and contributed to housing insecurity and intergenerational impacts that continue to impact communities today (Native Women's Association of Canada 2018; Fortis BC 2021; Larcombe et al. 2020; S. Fralin, personal communication, November 9 2023; Inuit Nunangat Housing Strategy 2019).

Colonial policies created—and continue to create—“one-size fits-all” housing, resulting in housing states that are energy inefficient, overcrowded, culturally inappropriate, and not designed for local climates. This situation further leads to a multitude of other challenges, including poor health outcomes and culturally unsafe healthcare, that do not reflect the power imbalance that exists within the current healthcare systems (Indigenous Clean Energy 2021; Kovesi et al. 2021; National Collaborating Centre on Indigenous Health 2017; Yumaglova et al. 2023; Assembly of First Nations 2018; Inuit Nunangat Housing Strategy 2019). The federal government and many provincial governments have recognized that the current state of Indigenous health is a direct result of colonial legacies (Government of Canada 2023). Canada is committed to ending racism that exists in the healthcare system, however those that are impacted by poor housing and health challenges are faced with an intersectional challenge in receiving culturally appropriate health care.

Health challenges in current housing landscape

On average, Indigenous Peoples in Canada have higher rates of illness and shorter life expectancy than non-Indigenous people, which many Indigenous people attribute to substandard housing (Figure 2) (Tasker 2018; Native Women's Association of Canada 2018; Tjepkema, Bushnik, and Bougie 2019; G. Hart, personal communication, January 22 2024; Nishnawbe Aski Nation 2018; Webster 2015; Nunavut Housing Corporation 2013). In 2013, 50.9 per cent of Indigenous adults reported mould in their homes caused by damp interiors and poor ventilation (Assembly of First Nations 2013). Among First Nations adults, 43 per cent of those who have asthma and 52 per cent of those living with chronic bronchitis are also living with mould in their homes (Assembly of First Nations 2013). In 2023, of 101 First Nations community homes surveyed in Ontario, almost half had visible mould (Malone 2023; Mallach et al. 2023).

FIGURE 2:

The links between Indigenous community housing and health

(Adapted from Indigenous Clean Energy 2021).

CHALLENGES	IMPLICATIONS	CONSEQUENCES
<ul style="list-style-type: none"> ■ Insufficient funding/financing ■ Poor building practices ■ Strained maintenance capacity ■ Best practices for community governance and maintenance not widely shared ■ Racism and discrimination entrenched in policy and legislation 	<ul style="list-style-type: none"> ■ Unable to build enough homes (shortage) or solve overcrowding (bedrooms per house) ■ Buildings built to minimum standards resulting in higher long-term costs ■ Unclear on how to set and enforce high building standards ■ Unable to perform regular maintenance ■ Extra stress (moisture, general wear, energy use) on existing buildings ■ Unable to properly engage community in building design 	<ul style="list-style-type: none"> ■ UNHEALTHY: Homes have mould, air quality and other issues ■ OVERCROWDED: Housing not suitable for community members' needs ■ UNAFFORDABLE: High energy consumption make homes more costly to operate ■ UNSUSTAINABLE: Homes do not last as long as they should ■ UNCOMFORTABLE: Homes have poor heating, ventilation, poor insulation, etc. ■ CULTURALLY INAPPROPRIATE: Homes do not reflect the community's needs

Overcrowding in Indigenous housing affects health outcomes

Chronic underfunding and funding policies have led to severe housing shortages in Indigenous communities. Indigenous people are over twice as likely to live in crowded housing, compared to non-Indigenous people (Government of Canada 2022; Stastna 2011; Inuit Tapiriit Kanatami 2024; Inuit Nunangat Housing Strategy 2019). In addition, Indigenous homes were traditionally multi-generational, with room for extended family members (J Nadjiwon, personal communication, November 7 2023; G. Hart, personal communication, January 22 2024). For decades, homes being built in Indigenous communities through government programs have been designed for small nuclear families, or for single occupancy, even though many families continue to live in a multi-generational manner. In 2021, one-sixth of the Indigenous population was living in conditions not suitable for the amount of people who lived there (Statistics Canada 2022).

The rapid degradation of Indigenous homes, largely due to poor construction and being ill-suited for their environment, can further compound household overcrowding. The First Nations National Building Officers Association reports that the average life of a home in a First Nation reserve is only eight to 10 years (First Nations National Building Officers Association 2011). As a result, rather than growing the stock of available housing to reduce overcrowding, communities are simply replacing existing homes.

Overcrowding plays a major role in the prevalence of domestic violence, child apprehensions by child welfare agencies, and in the frequency of missing and murdered Indigenous women, girls, and two-spirit people (Government of Canada 2019b; Marcichiw 2022; J.Nadjiwon, personal communication, November 7 2023). These impacts are also compounded by intergenerational trauma experienced by Indigenous people (Native Women's Association of Canada 2019; Government of Canada 2019b).

The Lanky Court apartments are seen in Yellowknife, Tuesday, March 7, 2023. A national housing network is calling on the Northwest Territories to declare a state of emergency when it comes to housing Indigenous people, particularly women and girls. THE CANADIAN PRESS/Emily Blake.



[When] Indigenous People are not in culturally safe spaces, it is detrimental to their emotional health, and they're less likely to seek out the services they need for their physical and emotional well-being.

S. Fralin, personal communication,
November 9, 2023

Overcrowding also negatively impacts mental and physical health, by increasing the risks of food insecurity, substance abuse, suicide, mood disorders like anxiety and depression, illness and disease (Nishnawbe Aski Nation 2018; Webster 2015; Standing Committee on Indigenous and Northern Affairs 2017). For example, “A lack of housing or poor quality housing can affect one’s mental health—a social worker in Kuujuaq estimated that “50 to 60 per cent of mental health problems would be solved with safe and adequate housing” (Standing Committee on Indigenous and Northern Affairs 2017). As well, when more people live in close quarters, communicable disease transmission and infection increases (K. Smith, personal communication, February 22 2024). This is reflected in the rates of tuberculosis transmission among Indigenous people—it’s at least 20 times higher than among non-Indigenous people and attributed to a number of factors related to substandard housing including overcrowding as well as mould and poor ventilation (Webster 2015).

Housing in the Arctic community of Cambridge Bay, Nunavut.



Energy inefficiency can contribute to “heat or eat” trade-offs

Northern supermarket in Clyde River, Nunavut.



According to Statistics Canada, nearly 16.4 per cent of First Nations households require major repairs compared to only 5.7 per cent of non-Indigenous households (Statistics Canada 2023; Government of Canada 2017). As there is a strong incidence of underreporting on census information within Indigenous communities, the discrepancy is likely even higher.

Homes that require major repairs are less likely to be energy efficient as they are more likely to have greater heat loss through air leakage, poor insulation, inefficient heating and hot water systems, and broken windows. While contributing directly to poor mental and physical health outcomes, these inefficiencies also mean that households need to spend more on home heating and cooling (Indigenous Clean Energy 2021; Liddell et al. 2010; Marmot Review Team 2011; O’Sullivan 2019). For some families and individuals, this can create a significant economic burden resulting in energy poverty—a situation that happens when households cannot attain or afford enough energy services to meet their needs, maintain healthy indoor temperature, and live with dignity (Bourzarovski and Petrova 2015; Thomson, Bourzarovski and Snell 2017). Some households facing energy poverty can engage in “heat or eat” trade-offs—where occupants must choose between buying groceries or keeping the heat on. “Heat or eat” trade-offs in Indigenous communities have not been researched heavily in Canada, yet scholarship and interviews with participants in this research detailed negative experiences with high energy bills, leading to stress on physical and mental health, which have impacts that are often underreported (Carley and Konisky 2020; Riva et al. 2023; A. Kantamneni, personal communication, January 10 2024). Energy bills also tend to be higher in overcrowded homes which adds to the stress these community members already face (Climate Action Team 2022; D. Heerema, personal communication, November 1 2023).

Houses are seen Saturday, April 25, 2015 in Iqaluit, Nunavut. Canada's housing advocate says investments in Inuit housing are "not adequate to remedy the human rights violations caused by the housing shortage." THE CANADIAN PRESS/Paul Chiasson

People pay for rent, then they pay for utilities, then whatever is left goes to food or medication. So we see that... some households resort to a heat or eat trade-off...choosing between paying utility bills versus putting food on the table.

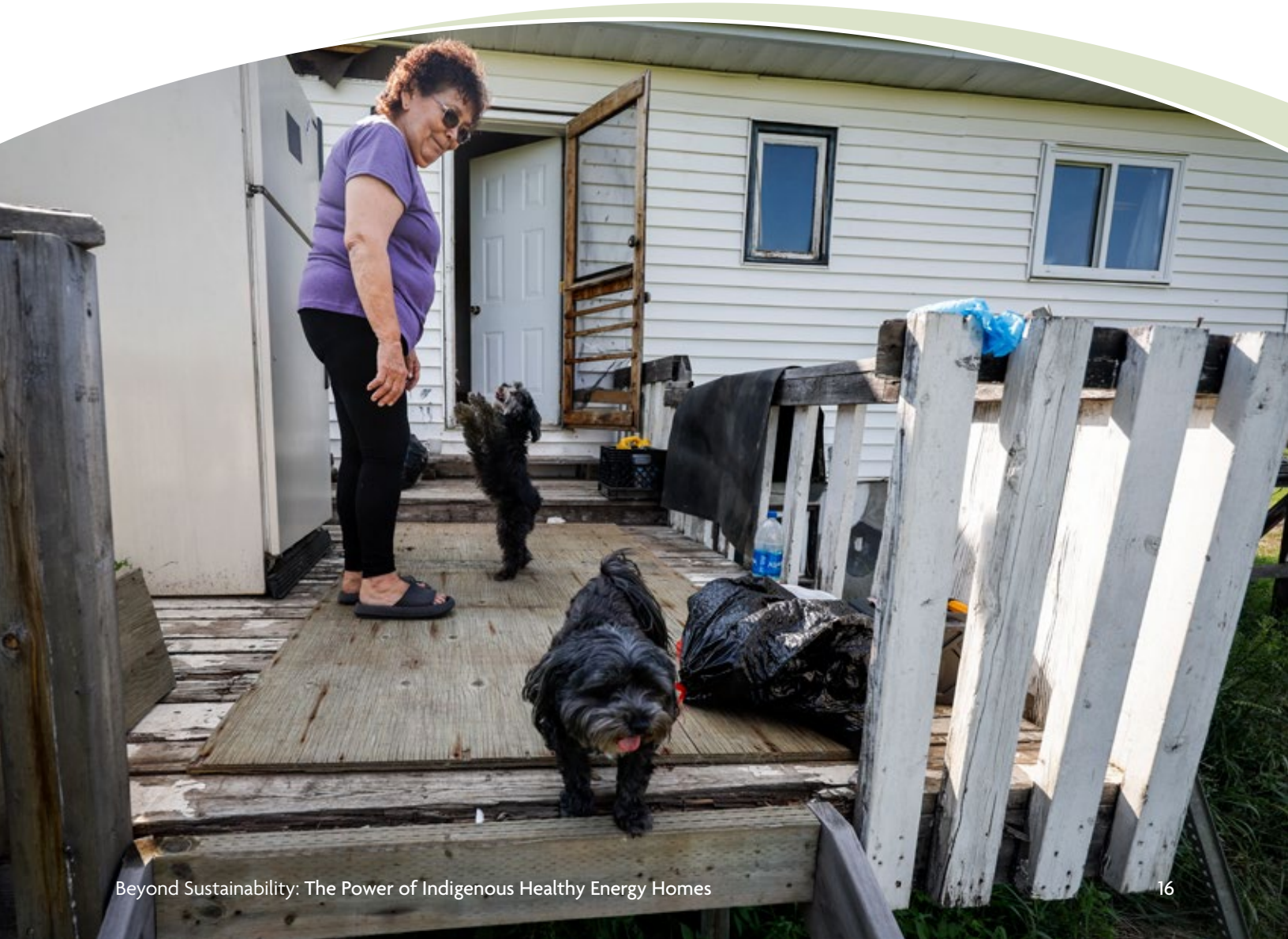
M. Riva,
personal communication,
November 1, 2023

For many rural and remote Indigenous communities, trade-offs can be more severe, as the cost of electricity infrastructure and maintenance is typically higher than in urban areas (Premium Electric 2023). For example, many rural and remote communities are still not easily able to access grocery stores, which forces them to ship in food and supplies at a very high cost, making energy affordability even more important (L. Humchitt, personal communication, April 15, 2024).

This is especially true for communities who are still reliant on polluting power sources, like diesel or gas generation (World Health Organization 2016). For example, "the costs of transportation, costs of maintenance of diesel generation, negative environmental and health impacts, and unknown liability of diesel spill clean up and reclamation" can all make accessing energy electrification more expensive than anticipated (Lovekin and Heerema 2019; Statistics Canada 2022). This means the true costs of power in rural and remote communities is often much higher (Lovekin and Heerema 2019). Communities reliant on polluting power sources are also at risk of other health issues because they are exposed to higher levels of carbon dioxide (Davis-Alphonse 2023), including asthma, cancer, heart disease, and premature death, which are often not included in costing and impact assessments (Environmental and Energy Study Institute 2021). Further, reliance on diesel generation puts ecosystems at risk: for example, in 2016 a tug-barge travelling the Inside Passage from Alaska to Vancouver ran aground, spilling nearly 110,000 litres of diesel and 2,200 litres of lubricants into the water in a culturally significant area (Carrigg 2019). According to local communities, the species who inhabited and provided for the coastal people in these areas have still not rebounded from this environmental disaster (L. Humchitt, personal communication, April 15, 2024).

Families and individuals experiencing energy poverty are also more at risk from the increasingly severe and frequent heat waves caused by climate change. Those who cannot afford the high costs of cooling are at risk from extreme temperatures (Carley and Konisky 2020; Yumaglova et al. 2023; J. Nadjiwon, personal communication, November 7 2023). Indigenous Peoples are already disproportionately affected by climate change, and the impacts of energy poverty and unhealthy homes, which are ill-suited to the environments they are built in, compound these impacts (Box 1) (Canadian Roots Exchange 2023; Green and Minchin 2014; Magis 2010; Wale 2022; Mosca 2023). As climate impacts get worse, more Indigenous Peoples will be displaced as unsafe homes cannot protect them from climate impacts such as flooding, wildfires and smoke, extreme heat or extreme cold—further widening health disparities between Indigenous and non-Indigenous Peoples.

Carrol Johnston stands with her dogs on the porch of a donated home she is trying to make livable after hers was destroyed by a wildfire on May 5, in East Prairie Metis Settlement, Alberta., Tuesday, July 4, 2023. THE CANADIAN PRESS/Jeff McIntosh



Built to last: Construction in Nuxalk Territory

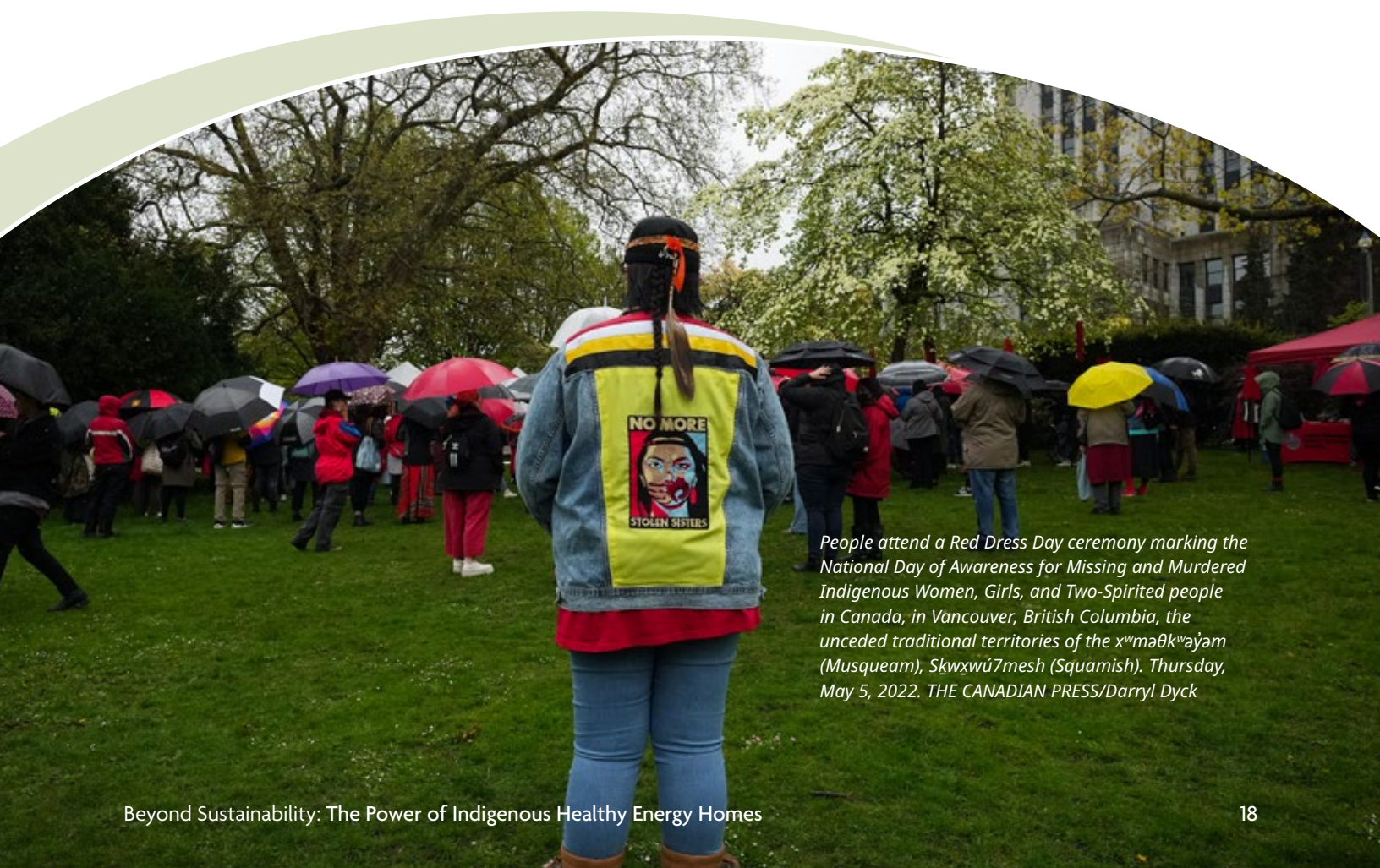
Nuxalk Nation in Bella Coola, British Columbia has begun building homes designed by and for their own people, and along with them, a stronger community (Government of Canada 2019c). The big houses have been designed to withstand the weather conditions along the west coast: each comes equipped with a 1-metre roof overhang on all sides to act as a rain screen and a three-quarter inch air space between the siding and the building as further protection (Government of Canada 2019c).



Exterior of a culturally appropriate, healthy home built by Nuxalk First Nation. The plans for these homes were designed by Richard Hall, Sea 2 Sky Architecture, and RDH Building Science, and have been turned into a publicly available set of plans called the West Coast Building Standard. Photo inset: The interior of the home is built with durable, mould resistant materials and measures that support effective air flow.

Equity-deserving people are disproportionately affected

Many equity-deserving people within Indigenous communities are affected even more by energy poverty and unhealthy homes: Indigenous women, girls, and people, and those living with disabilities. These groups make up between 25 and 40 per cent of Indigenous people across Canada who are living in inadequate housing situations (Canadian Roots Exchange 2023; Government of Canada 2019b; Standing Committee on Indigenous and Northern Affairs 2022). For example, two-spirit young people often experience a lack of privacy within communities, which exacerbates stigma, discrimination, and isolation, leading to their departure from community to receive safety and acceptance (Monchalín et al. 2023). These differences in lived experiences are often overlooked by policymakers, and not accurately reflected in health data as contributing factors to worse health outcomes in Indigenous communities (Box 3) (World Health Organization 2016; Smith 2024).



People attend a Red Dress Day ceremony marking the National Day of Awareness for Missing and Murdered Indigenous Women, Girls, and Two-Spirited people in Canada, in Vancouver, British Columbia, the unceded traditional territories of the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish). Thursday, May 5, 2022. THE CANADIAN PRESS/Darryl Dyck

A different understanding of home

Indigenous housing is “so much more than simply shelter” (Robson 2008). Understanding Indigenous community health and its link to housing first requires an understanding of the lived experiences of the community, including “not only housing, but family relations, hunting and fishing patterns, traditional practices, and local decision-making” (Robson 2008); “A place to honor culture and traditions. A social good. A place to connect to land, family and community. And a key pillar in environmental stewardship and sustainability” (Houle 2022).

For example, *“To understand Gvilas (our traditional laws) one must understand the Heiltsuk concept of home, which is not limited to the physical place where a Heiltsuk person lives, but extends to the village, one’s tribal territories and the greater collective territory. The Heiltsuk are connected with all beings throughout the home, therefore, Gvilas informs the life of a Heiltsuk person and his or her conduct and relationship with all lifeforms, with the land and water and all the resources, as well as the supernatural realm”* (L. Humchitt, personal communication, April 15 2024).

Traditional housing and community life was determined by culture, formed from relationships with the Land and waters, as well as the relationship to the change of seasons (Wale 2022; Yumaglova et al. 2023; Smith 2024). Homes were designed for local climates made from well-suited materials, and built to accommodate community activities (Yumaglova et al. 2023). Therefore, when evaluating housing and health outcomes, conversations must integrate broader understandings of cultural significance in order to get a complete picture (Nadjiwon, 2023; Smith 2024).

Ocean and coastline views in the Heiltsuk Territory of the Central Coast Regional District.



Governance and accountability challenges

What underpins these health and housing challenges? While several factors play a role, as touched on in the above sections, governance and accountability challenges are the core issues, undermining relevant and sufficient investment in Indigenous community housing.

A central policy challenge impeding housing improvements are jurisdictional issues (Al Mallees and Passafiume 2023; J. Nadjiwon, personal communication, November 7 2023). For decades, Indigenous housing has been top-down, controlled through the federal government. However many of the interrelated housing policies are treated as jurisdictionally separate (Reed 2019). This has led to confusion about who is responsible. Moreover, different departments are responsible for health expenditures and housing expenditures. This is in part due to the siloing of colonial governments that look at only one issue, rather than at the system of interacting and interconnected spheres (M. Riva, personal communication, November 1 2023; L. Tozer, personal communication, November 15 2023). As a result, unlocking savings in one department (i.e., health) by spending more in another (i.e., housing) would require better communication and collaboration between departments.

Another challenge is that Western approaches are often inappropriate and insufficient in understanding the full role of housing in community life. As a report from the Nishnawbe Nation states:

“Short timeframes and limited funding mean community members are rarely given the opportunity to participate in a design process, instead having choices limited to a few available standard designs. As a result, community design and layout have been undertaken with little community input in the siting and arrangement of houses” (Nishnawbe Aski Nation 2018).

This often leads to “dramatically reduced lifespans for newly built homes seen today due to the inappropriateness for the local climate and geography” (Nishnawbe Aski Nation 2018). As a result, housing policies employed by Western governments continue to undermine Indigenous sovereignty, much as they did in 1876, by not considering the full extent of Indigenous understandings of health and the spectrum of experiences between community members (Reading 2009).



Funding is also an issue that is exacerbated by governance and accountability challenges. In recent years, there have been various estimates of how much it will cost to address the Indigenous housing crisis,² including in a 2022 report from the Standing Committee on Indigenous and Northern Affairs:

“The Aboriginal Housing Management Association asked the provincial government for \$15 billion over the next 10 years to cover the housing needs for urban Indigenous Peoples. Further, according to a February 2021 report by the Office of the Parliamentary Budget Officer, there is an annual gap of \$636 million between what Indigenous households in urban, rural and northern areas pay for shelter and what is deemed affordable by CMHC [Canadian Mortgage and Housing Corporation]. The committee heard that First Nations require the following federal investments: \$44 billion to meet current housing needs; \$21.37 billion to build the community infrastructure without which additional housing units will not be built; \$164 billion to address population growth by 2040; and, \$2.6 billion over five years to address homelessness” (2022)

Budget 2022 allocated \$6.3 billion over seven years, leaving a significant gap between what is needed and what was allocated (Yesno 2022; M. Coady, personal communication, February 22 2024). As of 2023, due to inflation and increasing construction costs, it will now take \$135 billion to close the housing gap (Assembly of First Nations 2024; Union of BC Indian Chiefs 2024), which is significantly more than the \$918 million over five years allocated within the 2024 federal budget (Government of Canada 2024).

² It is important to remember that these estimates likely still fall short of what it would actually cost, given the large gaps in data pertaining to Indigenous Peoples and communities, particularly related to health and housing (Smylie and Firestone 2015; Canadian Mortgage and Housing Corporation 2022).

Indigenous Clean Energy's 20/20 Catalysts Program participants engaged in an energy audit in Iqaluit, Nunavut, to understand how energy efficiency affects the home.



The reality on the ground is that because community housing providers are so chronically underfunded, they are operating in this crisis mode where all they can focus on is fixing the health and safety emergencies of right now and they're not able to be in a place where they can plan for the future (S.Fralin, personal communication, November 9 2023). Within communities themselves, there is often difficulty in recruiting Chief Financial Officers who are also Certified General Accountants or with similar qualifications to support the management and operation of building or renovating homes (L. Humchitt, personal communication, April 15 2024).

The federal government has stated that, due to the high cost of addressing the infrastructure deficit in Indigenous communities, Indigenous Services Canada cannot fully cover housing costs in First Nations on-reserve communities (Government of Canada 2021; K. Smith, personal communication, February 22 2024). As a result, funders and housing managers can only offer partial solutions (if any) to housing challenges as they only have control over a portion of the funds needed to address the issue (S. Fralin, personal communication, November 9, 2023; G. Hart, personal communication, January 22, 2024). In addition, limited funding is often stretched further, as renovation projects often uncover additional issues like mould-infested insulation, or dry-rot, leading to cost overruns (L. Humchitt, personal communication, April 15 2024). Some funding policies require community members to pay up front and wait for reimbursement, which is not possible for many people particularly those on a fixed income or those who live paycheck to paycheck (Indigenous Clean Energy 2023; J. Nadjiwon, personal communication, November 7 2023). In addition to this, many rural and remote communities have higher costs of living and construction, which can again put money-up-front programs out of reach.

There is also no central funding organization to support communities, making it difficult to know where and how to apply for support (K. Smith, personal communication, February 22, 2024). It is clear different policies and approaches are needed to address the ongoing issues with Indigenous housing. One example of this being done by communities, is through community-led innovations (Box 3).

Innovation within Siksika Nation

Located approximately one hour's drive east of Calgary, Alberta, Siksika Nation is the second-largest First Nation in Canada, with over 8,000 registered members. Like many communities, Siksika is feeling the housing crisis, but is addressing it through innovative solutions.

In 2015, Siksika was the first Nation in Alberta to leverage the First Nations Market Housing Fund, which allows members to apply for a mortgage through guarantees from the Nation, partner organizations, and the federal government. Several years into the program they have built 10 new homes within the community, and recently renovated 20 more to be more appropriate for life in their community.

In 2023, Siksika also built 16 transitional houses for community members using 3D printing. The project, named Kakatoosoyiist (Star Lodges), supports members facing domestic violence or who are at risk of homelessness, and are designed with sustainability in mind (Coulter 2023; Carter 2023). The Nation has also partnered with Ecoplast solutions, and has developed two houses using over half a million recycled plastic bottles to reduce energy poverty within the Nation and create "sustainable, energy efficient homes" (Ecoplast 2024).



We are building our own housing economy, for our own people. It was challenging, but we are doing it on our own, and we are making it easier for our families to own a home. The goal is to get them into that house.

N. Breaker, personal communication,
April 20, 2024



Photo and inset (left): One of the transitional houses built by Siksika Nation using 3D printing. Inset, top right: An Ecoplast home. Photos courtesy of Siksika Nation

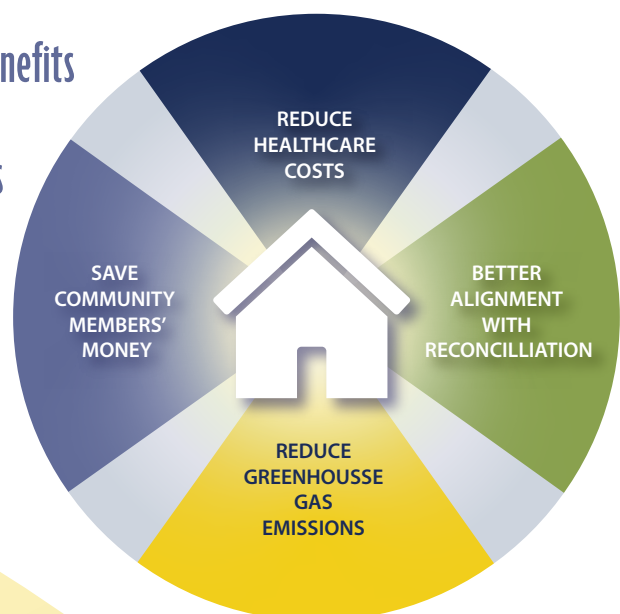


The case for Healthy Energy Homes

Since housing and health are complex and interrelated pieces of wellness as a whole, they are affected and influenced by a series of environmental, social, and cultural variables (Tully 2008; Burgess et al. 2009; M. Riva, personal communication, November 1 2023; L. Tozer, personal communication, November 15 2023). Although improving health outcomes for Indigenous Peoples is one of the biggest positive outcomes of building more Healthy Energy Homes, there are other associated benefits.

FIGURE 3

The nested benefits
of Healthy
Energy Homes



Elder teachers eat raw caribou in the teachers staff room, while wearing all their traditional Inuktitut clothing at the Nakasuk Elementary School in Iqaluit, Nunavut on Wednesday, April 1, 2009. The elders were teaching the children the old ways of Inuit culture. With games, feasts, fireworks and ceremony, Nunavummiut celebrate the 10th anniversary of what is still considered a signal achievement for aboriginal people. THE CANADIAN PRESS/Nathan Denette



“From a traditional perspective, everything is health. There is no real definition of health, it is about walking a good path—which incorporates everything in there: the relationship between you, your family, and the environment you are living in. You have to recognize those connections, and how they weave through everything that we do, in order to really have a healthy home.”

K. Smith, personal communication,
February 22, 2024

Healthy energy homes can reduce health costs

Health inequities and outcomes can be improved by addressing factors such as “poverty and housing insecurity, which create risks in the lives of Indigenous Peoples” (Government of Canada 2019b; Lea and Torzillo 2016). For Indigenous communities, who experience unhealthy housing at disproportionately higher rates, improving access to Healthy Energy Homes could be an impactful way to improve community health outcomes. Energy efficiency and clean energy measures play a crucial role in enhancing the well-being of occupants in homes within Indigenous communities and can be implemented through policy. The resulting Healthy Energy Homes can better regulate temperature, reduce energy consumption, improve indoor air quality, and reduce household toxins such as mould, all of which reduce the risk of respiratory illnesses, allergies, and other health issues that are exacerbated by poor living conditions (Indigenous Clean Energy 2021; International Energy Agency 2019). Improving the physical health factors and reducing experiences of energy poverty, Healthy Energy Homes are also creating “healthier emotional, mental, and spiritual environments” (International Energy Agency 2019).

Healthy Energy Homes also contribute to housing asset preservation, extending the lifespan of homes through the use of more durable materials and attention to energy efficiency measures like air sealing. Additionally, when retrofitting homes, repairs can be made to improve the condition of the homes. As a result, the number of homes can grow, helping address housing shortages and overcrowding and the associated health issues.

As Healthy Energy Homes promote better health outcomes, there could be less demand on healthcare systems and therefore reduced healthcare expenditures (Indigenous Clean Energy 2021; Baum 2022; Jaiswal 2022) (Box 2). Based on 2021 estimates, the minimum cost of both retrofitting existing community homes for energy efficiency and building new homes that meet advanced energy efficiency standards in all Indigenous communities by 2030 is approximately \$5.3 billion (Indigenous Clean Energy 2021). For comparison, the federal government spent \$8,671,995,189 on Indigenous health during the 2021-2022 period alone (Government of Canada 2022). While further research on the health-related costs from inadequate housing is needed to more precisely quantify the savings to be had, building Healthy Energy Homes could potentially lead to significant healthcare savings.

Kitchen layout in one of the 3D printed transitional homes on Siksika Nation. Photo courtesy of Siksika Nation.



Housing at the centre of the Hałtzaqv Community Energy Plan

An average home in Bella Bella, a remote community off the coast of British Columbia, consumes 23 megawatt hours (MWh) of power per year—more than double the average in the rest of the province (Hałtzaqv Community Energy Plan 2022). In response, Hałtzaqv First Nation created their Community Energy Plan “by Heiltsuk for the Heiltsuk”, to address energy and climate change in their community (Hałtzaqv Community Energy Plan 2022). The plan includes initiatives such as the development of a Passive House Kit which will enable Hałtzaqv to “build their own homes from their own wood”, and the continuation of work with partners to explore opportunities for net zero homes in their community (Hałtzaqv Community Energy Plan 2022). It also includes budgeting for retrofitting, and renovation-enabling activities that will address health outcomes in their community.

Our homes are lenses to the outside world. If we are looking through broken homes, we don't have hope for the future.”

Hereditary Chief Frank Brown
(Heiltsuk Nation)



Looking towards the community from the government dock in Bella Bella, B.C., on Tuesday, October 25, 2022. THE CANADIAN PRESS/Chad Hipolito

Healthy Energy Homes can support emissions reduction

As a whole, Canada has 2.85 billion square metres of buildings, which currently contribute 13 per cent of national greenhouse gas emissions (Torrie and Bak 2020). As with the oil and gas sector, the building sector's emissions continue to rise (Stiebert and Sawyer 2023).

If more Healthy Energy Homes are built in Indigenous communities, the emissions associated with poor housing conditions will decrease (Davis-Alphonse 2023). For example, one home in Bella Bella switching to a heat pump would help to eliminate over 2,000 litres of diesel needed per year (Hailzaqv Climate Action Team 2022). Assuming 2.7 kilograms of carbon dioxide (CO₂) per litre, this would be a reduction of 5.7 tonnes of emissions per home per year. This number equates to approximately 770 metric tonnes of carbon dioxide equivalent (tCO₂e) avoided after one third of the community (154 homes) made the switch (Natural Resource Canada 2014; Hailzaqv Climate Action Team 2022). On the other side of the country, the Mi'kmaw Home Energy Efficiency Project, which

*The Big House in Bella Bella.
Photo by Ian Scholten.*

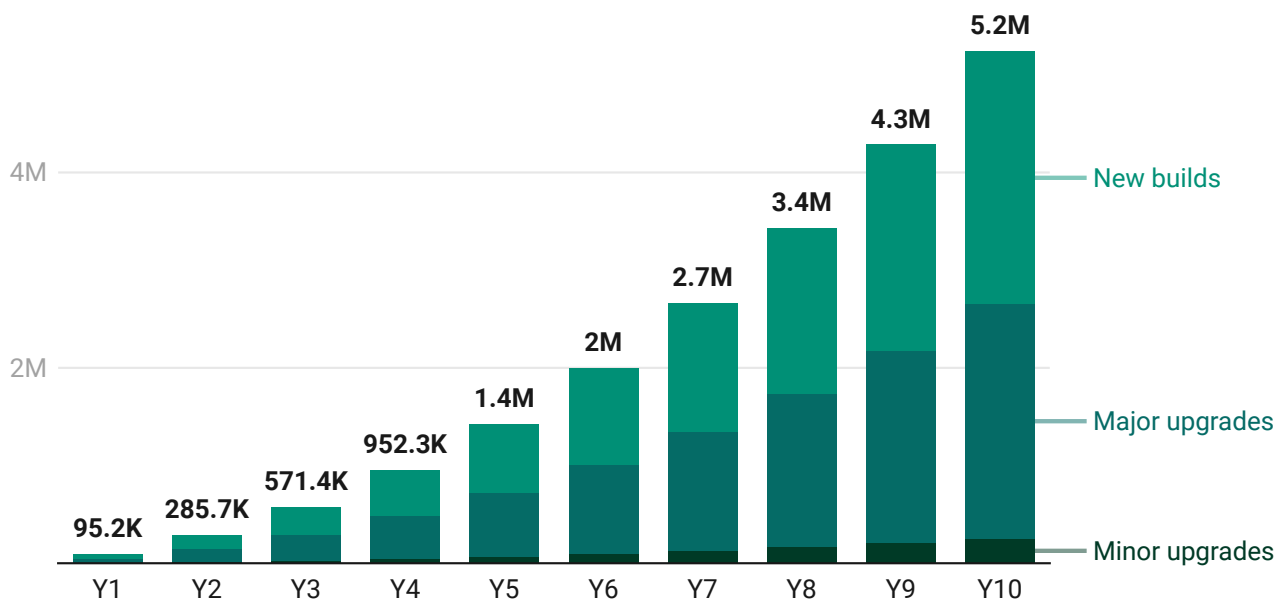


started in 2019, has so far reduced greenhouse gas emissions by about 1,000 tCO₂e, the equivalent of taking 540 passenger vehicles off the road (Natural Resources and Renewables 2022). Conservative estimates indicate that if Indigenous communities were able to switch to clean fuels, there would be an estimated total annual household reduction of emissions of 952,310 tCO₂e (Indigenous Clean Energy 2021). Cumulatively, this would be around 5,237,703 tCO₂e over ten years (Figure 3) (Indigenous Clean Energy 2021). Vancouver Coastal Health has recently launched an adaptation grant to promote the health of equity-deserving communities in climate change-driven extreme weather events, which supports emission reduction and the safety of individuals. Programs like this help ensure physical spaces have heating and cooling measures in place, increasingly important as events like the heat dome and wildfire smoke have impacted British Columbia.

FIGURE 4:

Greenhouse gas emissions avoided over 10 years from energy efficiency actions

Total cumulative tonnes of CO₂e emissions avoided



Source: Indigenous Clean Energy (2022) Energy Foundations - The Value Proposition for Financing Energy Efficient Homes in Indigenous Communities Canada-Wide



Photo taken at Yale First Nation Passive House Sixplex in November 2023.

Healthy Energy Homes can save communities money

If all communities were able to complete energy efficiency retrofitting there would be an estimated total annual operating cost savings of at least \$185 million (Indigenous Clean Energy 2021). While there is an investment needed to unlock these savings, the cost is justified, given the co-benefits that Healthy Energy Homes create. Community members agree that energy efficiency can create more disposable income, and help to offset the cost of living and address some of the issues related to energy poverty (Indigenous Clean Energy 2023; Energy Efficiency Canada 2022).

Moreover, energy efficient homes help lower energy bills and therefore reduce housing costs (Indigenous Clean Energy 2021). For example, Yale First Nation in British Columbia built a Passive House certified sixplex in 2017. Occupants of the sixplex save hundreds of dollars per year on utility bills compared to other homes in the community (I. Scholten, personal communication, June 7 2018; Elver 2018). This means families can allocate more resources to other vital needs, such as healthcare, ensuring that health issues are addressed promptly, and preventing costly long-term health complications. Lowering energy bills can also promote mental health, as it would alleviate the stress of the “heat or eat” trade-off.

At a community scale, Healthy Energy Homes can also save housing providers money. By using more durable products and better design and construction techniques, less major maintenance is needed. This allows communities to allocate financial resources to where they are needed most. It also means homes last longer—a major economic benefit to communities given the high and rising costs of construction.



Healthy Energy Homes can support reconciliation

Healthy housing and self-determination over housing is called for within the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), within the National Inquiry into Missing and Murdered Indigenous Women and Girls report (MMIWG), and within the Truth and Reconciliation Commission of Canada's recommendations (TRC) (Davis-Alphonse 2023; Lafferty 2022; Dembicki 2020).

It isn't just about money and investments, it is about people living in communities and having the use of their own funds for how they want to build homes, not how the government of Canada says they should (Coady 2024).

Therefore, it is essential that investments in and building of Healthy Energy Homes are done in partnership with Indigenous communities. Doing this would further the process of reconciliation, by supporting self-determination and the human right to a safe environment, which includes access to clean energy and safe housing (Tully 2008; Davison 2011). To create lasting changes and benefits, community members believe that changes need to come from inside the communities themselves (Dembicki 2020; Nishnawbe Aski Nation 2018; Quilty et al. 2022; D. Heerema, personal communication, November 1, 2023). This would also recognize Indigenous Peoples' right to self-determination, and allow for locally responsive and appropriate housing strategies for each community's needs (Marcichiw 2022; Nishnawbe Aski Nation 2018; K. Smith, personal communication, February 22, 2024).

Photo courtesy of Siksika Nation.

Indigenous governments and organizations and people need to be at the table of every decision that impacts them (D. Heerema, personal communication, November 1, 2023). For Indigenous communities in particular, clean energy and energy efficiency connects with cultural values, as it is more sustainable and therefore can better support future generations and stewarding the Land (Indigenous Clean Energy 2023). Policies that support clean energy, energy efficiency, and cultural safety are seen as avenues that will simultaneously enforce Indigenous principles of respect for the Land, while reducing the negative impacts of extraction and inefficient use (Isaac 2019; Davis-Alphonse 2023). Energy efficiency reflects the cultural value of “simply using less overall and getting the most out of what is used” (Indigenous Clean Energy 2023). Healthy Energy Homes have more durable construction, with better insulation, which means that homes will last longer. This means the resources will be used to their full potential, better reflecting the value of “not taking more than is needed.” This relational view of the Land translates to how the benefits of clean energy and energy efficiency will be available for future generations. Further, Healthy Energy Homes can also generate economic benefits through creating local jobs and businesses in the residential sector. Healthy Energy Homes reduce energy poverty and heal the Land, because they allow communities to “respectfully harness the power of the elements provided to them by Creator,” and maximize the use of these resources in a good way (Doyle, Jacobs, and Jones 2022; Hovey, Delormier, and McComber 2014; Isaac 2019).

Homes on the Siksika Nation are shown 100 kilometres east of Calgary near Cluny, Alta., Thursday, Sept. 28, 2023. THE CANADIAN PRESS/Jeff McIntosh





Unlocking nested benefits requires a new approach to Indigenous housing

The housing situation in Indigenous communities has been a long-standing problem that will continue unless all orders of government not only provide further investments of time and money but, most importantly, take a different and more coordinated, holistic approach to address this issue, one that is informed by an Indigenous-led approach to Indigenous housing (Robson 2008; Christensen et al. 2023). The multiple benefits of Healthy Energy Homes make them a worthwhile and smart investment, which could help to drive down healthcare costs while supporting the well-being and health of future generations.

... if you are able to get it right and really make a significant difference for folks in their homes, you can have a real transformative impact not just in their lives, but in the community livelihood as well as the externalities ... like reducing the burden on the healthcare system and all these things. If we get it right ... we also fix a lot of things.

D. Heerema, personal communication,
November 1, 2023



One of the important [changes] is to be able to have a roadmap to the funding mechanisms. When the First Nations are looking into funding organizations, they want to be able to know “when I want a healthy home, or energy efficiency, how do I get the funding to do it or where do I get the funding?”

K. Smith, personal communication, February 22, 2024

Importantly, capacity building and empowerment, which are elements of Indigenous sovereignty, have been shown to reduce disparities in health outcomes between Indigenous and non-Indigenous communities (Joseph 2023; Christensen et al. 2023). This means shifting power dynamics, capacity building, and decision-making power to communities, who are then able to “identify, develop, and sustainably implement interventions that actually meet the needs of their own cultural contexts” (Joseph 2023; McCartney 2016; Thistle and Smylie 2020).

Research to support Phase Two of this project will focus on the current policy landscape, jurisdictional accountabilities between governing bodies, and the synergies that exist between housing and health and how they can be optimized in policy. This in-depth research will culminate in a set of concrete policy recommendations and actions that governments of all orders should take to support a shift to building and investing in these homes, and start to make real and lasting change within Indigenous housing across the country.

Glossary

Healthy Energy Homes: Homes that are built or renovated with energy efficient systems that support the health of occupants. These homes go beyond standard building code requirements. The term Healthy Energy Home is not intended to be a housing certification like Net-Zero Energy Home or Passive House, rather it describes housing that is built in a way that supports community and cultural well-being, including physical and mental health aspects while reducing energy consumption and improving comfort.

Indigenous communities: This term is used in this report to reflect the communal connection of Indigenous Peoples. For the purposes of this report, it reflects 1) A formal First Nation, Métis, or Inuit community; 2) Indigenous people living in housing provided by an urban Indigenous housing provider; 3) Urban Indigenous people who are connected through local groups or Friendship Centres 4) Métis people living across a region as members of a Métis Nation or a Métis Local, 5) And more (Indigenous Clean Energy 2023).

Indigenous housing: In this report, Indigenous housing refers to housing that is inhabited by Indigenous people. This includes, but is not limited to, on- and off-reserve housing, urban Indigenous housing, and housing in chartered communities or Inuit settlements.

Net-Zero Energy Homes: A home that generates as much electricity as it uses.

Passive House: An internationally recognized, voluntary energy standard for construction, based on using energy efficient materials and applicable to almost any building type or design. Building to a Passive House standard reduces the amount of energy required to heat and cool the building.

Unhealthy housing: Housing that contributes to negative health outcomes, including chronic disease, injury and/or mental or spiritual distress. This includes, but is not limited to, housing that is structurally unsound, has lead, mould, asbestos, poor air quality, or is overcrowded.

Cultural safe healthcare: Healthcare that recognizes and strives to address power imbalances inherent in the healthcare system, resulting in an environment free of racism and discrimination, where people feel safe when receiving health care.

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