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Manufactured Home Retrofits in BC

How addressing retrofit barriers can improve the lives of residents and contribute to broader change

COMMUNITY ENERGY PROGRAM

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Contents

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Ecotrust Canada thanks the manufactured home residents who spoke to us about their experiences, challenges and attitudes, and all those who completed our Retrofits in Manufactured Homes Survey.

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This list does not represent an endorsement of this report or its recommendations by these organizations.

This work was completed largely on the traditional, unceded territory of the Sḵwx̱wú7mesh Úxwumixw (Squamish Nation).

Port McNeill, BC
Photos by Shannon Lough, Zosia Stevenson, Micheal-Anthony Lutfy and Robyn Ashwell, Ecotrust Canada

Executive Summary

Manufactured homes are built in a factory, on a steel frame, and then transported to the home site and anchored in place. They have formerly been called “mobile homes” or “trailers.” British Columbia is home to over a quarter of all the manufactured homes in Canada, and these make up approximately 4% of households in the province. Most of these manufactured homes are in rural areas, and most are located in manufactured home parks. In this setting, residents usually own their homes but rent the land from a park owner. Manufactured homes make up approximately 22% of housing on First Nation lands.

Manufactured homes are an important source of affordable housing in the province: residents account for only 1% of all households that spend 30% or more of their household income on shelter costs in the province, and 82% of manufactured homes are owned by their residents. However, manufactured homes also tend to be older and more energy-intensive than other types of housing, using an average of 61% more energy per square foot than other homes. Manufactured home residents often have lower or fixed incomes, are older, or are single parents. The combination of these structural and demographic factors makes manufactured home residents significantly more likely to experience energy insecurity, discomfort, and poor health.

For these reasons, manufactured homes represent an important retrofit opportunity: the potential energy savings are significant, and the potential impacts on residents’ bills, comfort and safety are even more so. This is particularly important in the face of more frequent extreme weather events.

The most impactful and achievable retrofits in manufactured homes are:

1. Addressing major infiltration, leaks, and health and safety repairs;
2. Repairing and sealing ductwork;
3. Other draft proofing and weatherization efforts;
4. Repairing the ‘road barrier’ and insulating the floor (and possibly the attic);
5. Installing a heat pump for high-efficiency heating and cooling;
6. Adding ventilation;
7. Upgrading windows.

These retrofits have the potential to generate annual household bill savings of $700 -$1000, and household energy savings of 33-42 GJ, reducing emissions by 0.2-4.2 tonnes of CO2e each year. Improvements to the comfort, well-being, safety and health of residents through these measures are an even greater justification for supporting and accelerating manufactured home retrofits.

However, there are unique barriers to retrofitting manufactured homes. These are related to the unique construction and attributes of this type of housing, to the constraints related to manufactured home parks, to the concerns and demographics of residents, and to some big picture and market considerations.

Manufactured homes may need special treatment in retrofit and rebate programs and unconventional financing programs to justify and support retrofit work. Cost is the greatest barrier for residents, so financial support must be extensive enough to bring retrofits within reach. Existing rebate programs are already well-positioned to address these barriers, but they could be enhanced and expanded.

To address the barriers related to the manufactured home park setting, there are some technical considerations. Site choice is important when installing heat pumps, but first, residents need permission from park owners. Park owners need support to access information

about their park's electrical capacity, so they can make informed decisions (and not block retrofits unnecessarily). Where electrical capacity is limited, there may be opportunities to electrify homes without increasing demand. In some cases, upgrades may be necessary, and park owners could use financial support for this work.

Some barriers are related to cases of poor management in parks and the vulnerability of residents as tenants. The context of a housing crisis makes resolving these issues more complicated and more urgent. Using municipal bylaws could help, as well as increasing the Residential Tenancy Branch's resources and allowing for group complaints. Education for park owners and managers can illustrate to them how supporting retrofits is in their interest.

Where parks are being sold or redeveloped, regulatory attention is needed because of their importance in the affordable housing puzzle. Zoning, tenant protection strategies, and non-profit park ownership models could all make a difference.

To overcome the barriers related to the unique structure of manufactured homes and their rural locations, contractors may need specific training as well as specific incentives and retrofit specifications. The rebate programs that support work on manufactured homes also need to be fair to contractors.

Strategic efforts are needed to make contact with residents and to inform them about helpful retrofits and available support. Guidance through the retrofit process is also a key need. A community partner model may be the most promising opportunity for providing this support, by leveraging existing relationships and facilitating the retrofit process.

Overall, the case for retrofitting manufactured homes is strong, both for improving well-being and reducing energy use. This work is also an opportunity to examine the benefits and challenges related to this affordable housing stock in the province, to make impactful improvements, and to learn valuable lessons for the broader work of addressing the housing and affordability crises, building resilience, and tackling emissions in British Columbia.

Major Recommendations of This Report

Administration of Provincial Rebate and Retrofit Programs (Clean BC, Utilities)

- Expand BC's Energy Conservation Assistance Program by:
  - adding fuel-switching support and providing heat pumps to all participating homes;
  - increasing the number of manufactured homes reached, through enhanced promotion strategies and the use of community partnerships and bulk processing.
- Adjust the Energy Savings Program to better support manufactured homes by:
  - allowing electrical upgrade rebates to be used for load-sharing devices;
  - increasing the maximum rebate amounts for health and safety measures, and dropping the requirement for contractors to seek duct exemptions in manufactured homes;
  - improving support and timely payment processes for contractors.
- Improve the Partners in Indigenous Energy Efficiency and Resilience Program by increasing rebate amounts for heat pumps and insulation.
- Consider extending multi-unit residential building (MURB) opportunity assessment funding to manufactured home parks, to support park owners in being informed about park electrical capacity.

Technical and Training (TSBC, HPSC, BC Hydro, MHABC)

- Approve load sharing devices for uses beyond EV charging.
- Present about BC Hydro's Peak Load Portal to the Park Owners Alliance, to support park owners in finding information about park electrical capacity.
- Advance the Home Performance Contractor Network's work to recruit and incentivize skilled contractors doing retrofit work, especially in rural areas.
- Increase training for electricians on HVAC applications.
- Develop and release specs for manufactured home retrofits in BC.

Policy and Regulation

- Improve the Residential Tenancy Branch's processes and allow group complaints.
- Consider legislation to block bans on heat pumps. Accompany this with education on load sharing devices for park owners and electricians, and support for infrastructure upgrades where needed.
- Consider requiring electrical planning reports for parks.

Community (MHPO, BCMHO, Utilities, Community Organizations)

- Promote retrofit success stories and educate park owners on how supporting retrofit work can benefit them.
- Pilot community retrofit programs in manufactured home parks, to refine strategies for resident outreach and test a community partner model.

Project Approach

This research project involved reviewing a wide range of articles, books, legislation, studies, and projects related to manufactured housing. Many resources are from the United States, but some Canadian and British Columbian sources were also located. The sources reviewed were extensive; the most useful have been listed as references.

Informal interviews and follow-ups with all the provincial organizations connected to this industry helped to fill out a picture of the frustrations, concerns, hopes and needs of manufactured home residents, park owners, strata owners, and the surrounding industry.

Informal interviews with five retrofit program designers and managers informed an understanding of what retrofitting manufactured homes entails, and of the Energy Conservation Assistance Program's efforts for improving manufactured homes in BC.

Informal interviews and conversations with six contractors helped clarify details of manufactured home retrofits and the experience of contractors in this setting, as well as their experiences with rebate programs. During this research, Ecotrust Canada distributed a Retrofit Contractor Survey, which received 114 responses.

Information gathering conversations with three park owners and managers and six residents added details and personal experiences to the research, along with the 125 responses received from an Ecotrust Canada survey of manufactured home residents, distributed by the Active Manufactured Home Owners Society. The survey asked about residents' retrofit experiences, barriers to retrofits, attitudes and concerns, as well as some questions about their homes and their communities. The survey link was open for four weeks, and participants were encouraged to share the link with other residents. A draw for 8 prizes was offered. However, the survey was sent out exclusively by email, so responses are limited to residents with some level of digital literacy and, by and large, to people who had engaged with the BCMHO for some reason in the past—for interest, advocacy, or seeking support with an issue in their park. Some areas were overrepresented in the survey, but responses still represent 47 different manufactured home parks spread across the province, as well as a few non-park residents.

Energy saving data was generated by Ecotrust Canada's community energy team, using the HOT2000 program, based on a typical manufactured home built around the 1980s; specifications and performance data were based on a variety of sources, including industry associations and reports from past and current retrofit programs in both the United States and Canada.

Introduction and Context

In British Columbia, we are facing overlapping and compounding crises. The housing crisis, cost-of-living pressures, and inequality are straining households, especially in lower-income brackets. Meanwhile, the changing climate demands that we increase the resiliency of all our communities and infrastructure to keep people safe and healthy. And ramping up our efforts to reduce emissions quickly and deeply is still a moral and economic imperative. "The need to take urgent action together to reduce the impacts of climate change and build a strong clean economy for everyone has never been clearer."[1]

Work that helps to tackle all of these issues at once—like retrofitting manufactured homes—is worth our attention.

Manufactured homes are built in a factory, on a steel frame, and then transported to a home site – often in a manufactured home community or "park". Once anchored in place, they are considered permanent structures. The terms "mobile home" and "trailer" are considered out of date; these homes no longer have permanent axels, and they are costly and difficult to relocate. Manufactured homes make up around 4% of households in BC.

Housing Unaffordability

Housing is "the bedrock of our lives".[i] Yet Canada is facing a complicated housing crisis, and BC is particularly affected. According to 2021 Census data, the rate of unaffordable housing – the proportion of households that spent 30% or more of their income on shelter costs – is 25.5% in BC, the highest in Canada.

The reality is stark: over 26,000 people experienced homelessness in B.C. at some point in 2021;[ii] between 2016 and 2021, one in ten renter households was evicted in BC; between 2015 and 2021, the average house price doubled, but wages increased by only 7%. The ripple effects of BC's housing crisis profoundly impact individuals, communities, and the provincial economy.[iii]

Manufactured Homes and Affordability

While manufactured homes make up around 4% of households in BC, and residents' incomes are typically well below the provincial average, manufactured home residents account for only 1% of all BC households who spend 30% or more of household income on shelter costs.[iv]

The average value of a manufactured home in BC is around one quarter the average value for other types of homes,[v] and the proportion of manufactured homes owned by their residents (82%) is high compared to the average (67%) across all types of housing.[vi]

A 2021 BC Hydro survey[vii] shows that most manufactured home residents have lived in their home over 10 years.

These statistics help to illustrate how manufactured homes are providing an

1 Clean BC Roadmap to 2030, opening remarks.

important stock of affordable housing in the province, worth examining, improving and protecting.[2]

This report delves into some of the challenges associated with this type of housing, but there are advantages, too. It's even possible that, like some States are exploring now,[viii] expanding the use of manufactured homes through education, innovation, and zoning reform could improve access to cost-effective housing.

Energy Insecurity

Unfortunately, the least expensive homes are often the least energy efficient, and thus the most expensive to heat and cool (and they often have appliances that use more electricity, too). Furthermore, energy costs in remote communities are often much higher.[ix]

Canadian Urban Sustainability Practitioners (CUSP) defines energy insecurity (or energy poverty) as household spending of more than 6% of after-tax income on home energy services. This is roughly twice the national median. According to Energy Poverty in Canada: a CUSP Backgrounder, households living in manufactured homes have the highest likelihood of experiencing energy insecurity.[x]

Manufactured Homes and Energy Use

According to BC Hydro data, manufactured homes have, on average, a 61% higher energy use intensity per square foot, compared to all other dwelling types.[xi] This translates to high energy consumption for a relatively small floor area.[3]

The majority of manufactured homes in BC (59%) are more than 35 years old, which means they were built before energy efficiency measures were included in the CSA Z240MH Standard, the Canadian building standard for manufactured homes. About 10% of BC's manufactured homes are reported to be in need of major repairs, and an additional 28% in need of minor repairs.[xii]

Manufactured Home Residents

Older people, single parent families and one person households are overrepresented in manufactured homes in the province:[xiii]

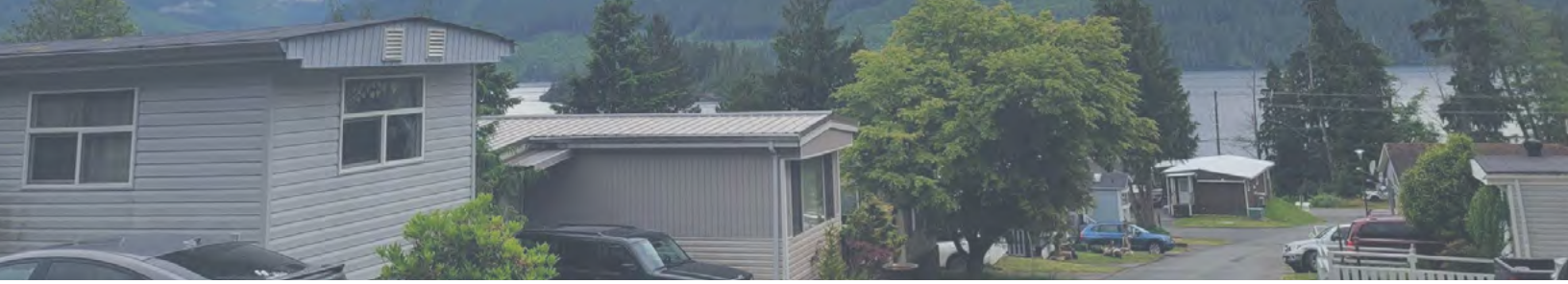
Statistics Canada's Estimation of Energy Poverty Rates[xiv] shows how these household characteristics are all correlated with higher rates of energy poverty.

The typical income of manufactured home residents (median $55,600, average $60,250 after taxes) is 35-38% lower than the provincial median or average. According to BC Hydro's 2021 survey, half of manufactured home customers have an income lower than $40,000 per year.

Even though manufactured housing is relatively affordable, the combination of these structural and demographic factors makes manufactured home residents significantly more likely to experience energy insecurity.

2 BC's 2023 Homes for People action plan includes goals for helping those who need it most, and for fighting speculation and profiteering. Protecting and improving manufactured homes and their communities should be part of the strategy.

3 This results in the same consumption for 40% less space, or 71% higher consumption for the same amount of space. See BC Hydro's Energy concepts, explained, https://www.bchydro.com/powersmart/residential/energy-explained.html.



Buildings and Health

The buildings we spend our time in have significant effects on our physical and mental health – for better and for worse. Numerous studies connect discomfort, temperature extremes, dampness and mould to increases in cardiovascular disease, strokes, asthma and other respiratory diseases, and premature deaths. Energy insecurity and building disrepair are also sources of increased stress.[xv] Unfortunately, these issues are all common in manufactured homes, due to their age and construction methods.

In an extreme example, the report to the BC Coroner reviewing the deadly June 2021 heat dome in BC found that 98% of deaths occurred indoors, 67% of decedents were 70 years of age or older, more than half of all decedents lived alone, more decedents lived in socially or materially deprived neighbourhoods, and most decedents were in homes without adequate cooling systems such as air conditioners or fans. Not surprisingly, then, a disproportionate 7% of the 619 deaths occurred in "mobile homes and trailers".[xvi]

Retrofits are an opportunity to improve not only a building's energy efficiency, but also the comfort, health, well-being and safety of residents. Retrofits achieve this both through the direct effects of retrofits, and by reducing stress and opening new opportunities through bill savings.[xvii]

Buildings' Energy Consumption and Emissions

Emissions from homes and commercial buildings were 12% of B.C.'s total emissions in 2022—around 7.8 million tons of CO2e, mostly from space and water heating.[xviii] This is the third highest emissions by economic sector, after transportation and the fossil fuel industry.[xix]

To meet the province's emissions reduction targets, the Buildings and Communities sector is supposed to reduce emissions to 59-64% below 2007 levels by 2030.[xx] So far, BC's overall building emissions have grown rather than shrinking, by 0.3 MtCO2e, or 11% since 2007. As the IEA clearly states: "improving the performance of older buildings that have not integrated energy efficiency requirements since their construction is a critical priority."[xxi]

BC's buildings also account for 25% of energy consumption in the province.[xxii] Reducing this demand through energy efficiency is a cost-effective way to meet future energy needs and to free up power for other uses.[xxiii]

Retrofitting manufactured homes in BC is low-hanging fruit: for preserving and enhancing affordable housing in the province, reducing energy insecurity, improving residents' health and comfort, reducing their vulnerability to the effects of climate change, and reducing both energy use and emissions.

However, manufactured homes are also unique in a variety of ways that make this work more complicated.

This report aims to identify and understand the technical, social and financial barriers to retrofits; to explore the feasibility of solutions; and to inform and improve Ecotrust Canada's approach, make policy recommendations and promote the support of manufactured home residents more broadly. But first, a snapshot of manufactured homes and their place in British Columbia.

Manufactured Homes

Manufactured homes are built in a factory, on a steel frame, and then transported to a home site. In Canada, they are constructed under the Canadian Standards Association (CSA) Z240MH Standard, which became mandatory in 1976. It is a stand-alone building code, covering all aspects of construction – including energy efficiency standards since 1992. Today's Standard is considered equivalent to BC Building Code's Step 1.[4]

The CSA also has an anchoring standard (CSA Z240.10.1). When a manufactured home is anchored following this standard, taking into consideration seismic and wind conditions, it is considered to be on a permanent foundation.

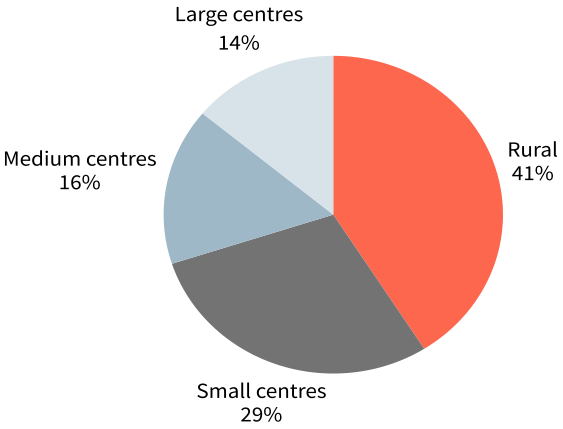
Manufactured homes are usually "single wide" —a self-contained unit fully built in a factory—or "double wide", where two units are transported separately and then attached and sealed to each other once in position.

The terms mobile home and trailer are considered out of date by the industry (generally, trailer refers to homes built with wheels and axles, prior to the CSA Z240MH Standard being established. Since around 1985, the term mobile has been considered not suitable for homes that are very heavy and are moved on dollies that are separate from the structure.) Manufactured homes are distinct from modular homes, which are typically built as segments in a factory, then assembled on site on a standard foundation, without a steel frame. Modular homes must be fully compliant with the current BC Building Code.

The origin of manufactured homes can be traced to early 20th century camping trailers towed behind cars. The Great Depression, World War II, and post-war construction projects all contributed to significant increases in the use of trailers for year-round living. Gradually, the name shifted to "mobile homes", the size increased, more manufacturing plants opened, financing options expanded, and pressure grew for better quality standards, both in the United States and Canada.[xxiv]

4 According to the industry association, the Manufactured Housing Association of BC (MHABC). https://mhabc.com/

Manufactured housing makes up a greater proportion of overall housing in the United States than in Canada: the 7.2 million occupied manufactured homes in the U.S. represent 5.4% of total occupied housing,[5] compared to only 1.3% Canada-wide, and there are approximately 43,000 manufactured home communities in the United States, so there are more American resources and data on this type of housing.

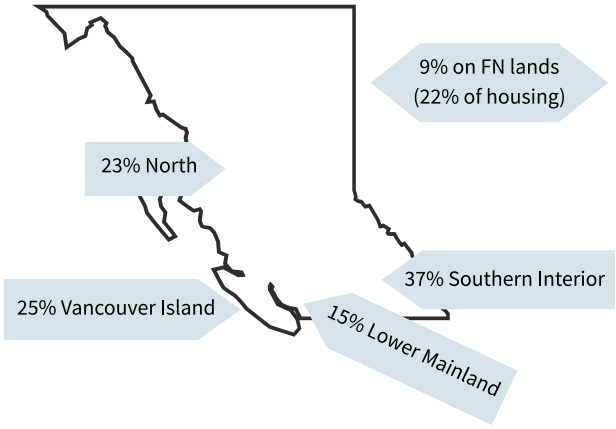


Manufactured Homes in BC

In British Columbia, there are approximately 80,000 households living in manufactured homes.[6] These homes represent around 27% of all the manufactured homes in Canada.[xxv]

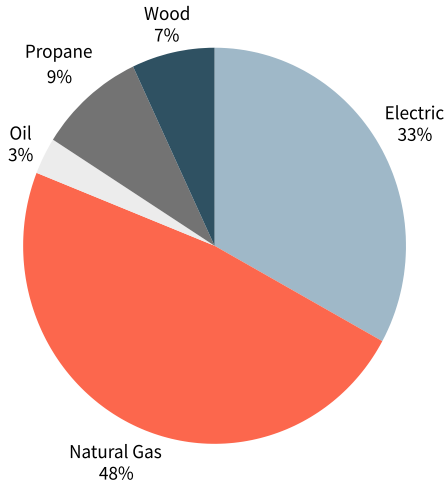
A large majority (70%) of manufactured homes in BC are in rural areas and small towns (1,000-10,000 people).[xxvi]

By region, manufactured homes are spread across the province as follows.[7] BC Hydro also estimates that between 6,600 and 7,000 manufactured homes are on First Nation lands in BC, making up 22% of housing.



For heating, the majority of manufactured homes in BC still use fossil fuels.

BC Hydro's 2023 Residential End-Use Study estimates that approximately 13% of manufactured homes have installed heat pumps so far. It also shows that a large majority (92%) of manufactured homes have in-unit electric clothes dryers, which could provide an opportunity for load-sharing devices to be used, where electrical capacity is limited.[8]



5 From the 2023 American Housing Survey.

6 Estimated based on a combination of data from BC Hydro's Residential End Use Study, Fortis Electric's customer base, and information from BC Assessment and BC Registry Services.

7 From BC Hydro's Residential End Use Study, adjusted for an estimated number of manufactured homes in Fortis BC's electric service area.

8 The prevalence of electric dryers by region is: 97% in the Lower Mainland, 87% on Vancouver Island, 93% in the Southern Interior, 92% in the North.

Manufactured Home Communities (Manufactured Home Parks)

The majority of manufactured homes in BC are located in manufactured home land-lease communities, usually referred to as manufactured home parks. In this setting, the park owner owns the land and rents out "sites", "lots", or "pads" for manufactured homes to be placed on. Most often (over 80% of the time), the residents own their manufactured home.

There are approximately 900 manufactured home parks like this in BC.[9] Around 60 additional manufactured home communities in BC are owned as strata corporations, which are discussed below. Manufactured home parks range from just a few lots to hundreds of lots. The average park size is around 45 lots. The majority of BC's manufactured home parks were established between the 1970s and 1990s. **These communities are home to at least 60,000 households.**[10]

Manufactured home communities are an important source of affordable housing. Pad rents are usually in the range of $200-$1,200 per month in BC, and older manufactured homes are relatively inexpensive,[11] so residents generally have lower housing costs than a conventional rental in the same community. Plus, they have the additional benefits of owning their home and having some yard space (unlike apartments, which are often the most affordable alternative).

Some parks are explicitly family friendly. Others are 55+ communities. Parks sometimes have shared amenities like a clubhouse, storage facility or playground. **Parks can be amazing places to live, with proactive and kind managers, quiet and safe streets, and a great sense of community.**

However, there is also complexity and risk that comes with this housing arrangement. Since manufactured homes are very costly to move, a homeowner who is dissatisfied cannot easily relocate (for example, if park conditions deteriorate, if rents are increased, or if they are evicted). This can leave residents with little agency when faced with poor management or a park being sold or redeveloped. Unfortunately, there are many parks in BC where residents face these challenges.

Furthermore, a trend in the United States that may be starting to impact BC is that more corporations or private equity investors are buying up manufactured home parks, which they view as reliably profitable investments. (There are even organizations that "teach mobile home investing" in the United States, pitching that "affordable housing is the hottest arena in commercial real estate right now.")[12]

When a tenant owns their home and rents a site in a park, this tenancy is governed by the Manufactured Home Park Tenancy Act.

Some important provisions of the Manufactured Home Park Tenancy Act are summarized in Appendix A.

9 BC Assessment lists 935 properties classified as manufactured home parks in the province, but around 4% of these are either duplicates—one park using more than one property—or they are not actual manufactured home parks, but are coded as such because this is the best fit for tax purposes.

10 Manufactured Home Park Owners Alliance, https://www.mhpo.com/pg

11 According to Statistics Canada data, manufactured home prices are typically 75-80% lower than other houses, partly because the land is not included. Thus, mortgages are relatively low.

12 For example, "Mobile Home University" https://www.mobilehomeuniversity.com/

Stratas

Some manufactured home communities have a different ownership model. Instead of the land being owned by an individual (or corporate) park owner, these properties are owned as strata corporations. According to BC Assessment data, there are approximately 60 stratas with manufactured homes on at least 50% of their lots in BC. These provide sites for approximately 3,350 manufactured homes.

In some cases, these stratas are still called "manufactured home parks". But these communities are governed by BC's **Strata Property Act**. In this setting, a resident usually owns their manufactured home, like in a land-lease community, but they also co-own the strata corporation; in other words, they own a proportion of the strata's land, their strata lot.

These communities are almost always structured as **bare land stratas**, which means that each strata lot is essentially a plot of land, and the owner is responsible for the insurance, repair and maintenance of their house and driveway. Like other stratas, a bare land strata may own common property, such as roads, streetlights, a clubhouse or playground, and sometimes a septic system or other infrastructure, which is insured and maintained by the strata corporation.[xxvii]

That is why strata owners pay **strata fees** for the operation and maintenance of the strata. These communities are governed by an elected strata council, and owners are subject to the strata bylaws, which can only be amended when passed by 75% of votes at an annual or special general meeting.

There are pros and cons to a strata model compared to a park owner model, revealed by conversations with strata owners and organizations. On one hand, it can be difficult and time-consuming for a strata to make a decision or to get an initiative moving. On the other hand, a collective ownership model has some advantages. Especially when compared to an individual park owner making unilateral decisions, which can have huge effects on the lives of residents.

Organizations

Several organizations are involved in supporting and promoting the manufactured housing sector in British Columbia.

Active Manufactured Home Owners Society of BC (BCMHO)

BCMHO supports manufactured home owners and residents by answering questions, educating them about their rights, and advocating on their behalf (for example, by participating as a stakeholder with the Residential Tenancy Branch, and by meeting regularly with the Park Owners Alliance). The BCMHO website states, “We believe in and work towards keeping 'housing on rented land' as an affordable housing option.” Manufactured home owners most often contact the BCMHO when they encounter issues in their parks or need help navigating a dispute.

Manufactured Home Park Owners Alliance (MHPOA)

The MHPOA’s vision is "building partnerships that create safe, affordable home ownership in quality manufactured home communities”. They provide information and advice to their members, organize educational conferences and events, advocate on behalf of park owners, and work to enhance the image of manufactured home parks as desirable and affordable communities. Around 40% of park owners in the province are members.

Manufactured Housing Association of BC (MHABC)

MHABC is the industry association for manufacturers, transporters and distributors of both modular and manufactured homes. Their purpose includes liaising with various governments on building codes and zoning; consulting on technical committees and with the CSA; public relations and education about the industry; and promoting the benefits of modular and manufactured housing. These benefits include being more affordable and more engineered, well designed and consistent (repeated design), efficient in material use and on schedule, and generally built to a good standard.[13] The industry in this region currently produces approximately 1000 new manufactured homes per year.

Vancouver Island Strata Owners Association (VISOA)

VISOA is a non-profit society supporting stratas and strata councils across the province (despite their name), providing information, education, training and advice to strata owners, and representing their interests and concerns. This includes consulting with governments and utilities (on topics such as the new requirement for strata Electrical Planning Reports), and providing guidance for professionals working with stratas.

More details on each of these organizations can be found in Appendix B.

13 Conversation with Gord Ratray, Executive Director of the MHABC. March 2025.

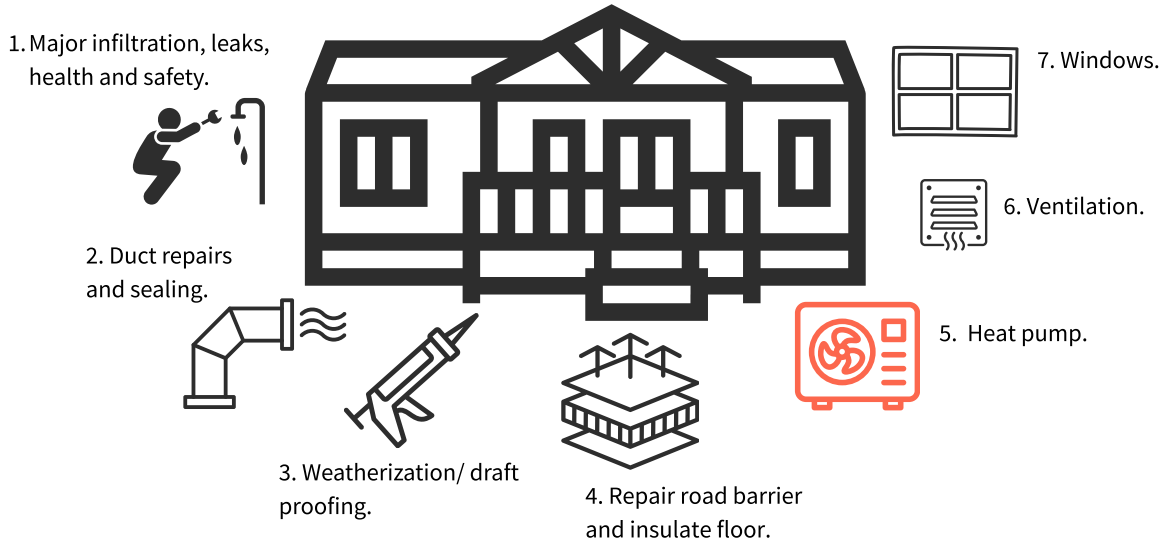
Retrofits for Manufactured Homes

To recap,

- 59% of manufactured homes in BC are more than 35 years old;
- Manufactured homes' energy use intensity is 61% higher than other housing types;
- Almost 40% of manufactured homes in BC are in need of major or minor repairs;
- Manufactured homes are prone to being under-insulated, having frequent moisture issues, inefficient heating with inadequate distribution, and significant air leakage.
- These factors greatly increase the chance of unhealthy conditions – mould, drafts and overheating are common issues.
- "If it has a good roof, someone will be living there! We don't have an excess of housing."[14]
- 76% of residents who responded to Ecotrust Canada's survey would like to do renovations to make their home more comfortable and/or efficient. Their top reasons are saving money on heating and cooling, and being more comfortable.

For all these reasons, retrofits can make a particularly big improvement in manufactured homes' energy usage and residents' comfort. Based on conversations with manufactured home retrofit program designers[15] and contractors, and a review of books and articles on the topic,[xxviii xxix] here is a summary of recommended work (and relative priority) for manufactured home retrofits.

Detailed retrofit recommendations, challenges and cautions, and additional comments can be found in Appendix C.



14 Interview comment from Chris Clay, Bellingham Building Performance Centre.

15 Chris Clay at the Bellingham Building Performance Center and Ryan Coleman of Ecolighten Energy Solutions (based in Vancouver) have both put extensive time and consideration into designing retrofit programs for manufactured homes in Washington State and in BC.

1. Major infiltration, leaks, and health and safety repairs

In some cases, issues such as broken windows or unsafe structures or wiring must be addressed first.
"You must have repair dollars, you will encounter issues!"

2. Duct repairs and sealing

The vast majority of manufactured homes have forced-air heating systems. Collapsed and damaged ducts are very prevalent— often caused during transportation. Even when ducts are intact, they are usually poorly sealed; leaks send conditioned air outdoors, since in most cases, ducts are outside the envelope of the home. If ducts will not be used after retrofits, they need to be properly sealed off.

"They will notice a difference."

3. Other draft proofing/weatherization

Sealing other penetrations in the building envelope is also hugely impactful in manufactured homes.
"The reduction in leakage from weatherization in a manufactured home is typically double the improvement generated in a single detached home."

4. Repair road barrier and insulate the floor (and possibly the attic)

When combined with air sealing and duct sealing, this will significantly increase comfort and thermal performance. In some cases (often in double-wide homes), adding insulation to the attic is relatively easy, but most often, the attic space is too shallow. Floor insulation has a significant impact on energy use and comfort.

5. Heat pump installation (potential electrical panel upgrade or load share device)

Installing a heat pump represents a huge opportunity for efficiency improvements, better performance and comfort, added cooling benefits, and electrification (fuel switching). Mini-split heat pumps can be very effective in manufactured homes.

6. Ventilation
Adding ventilation alongside weatherization work will reduce moisture issues and improve health through better air quality in the home.

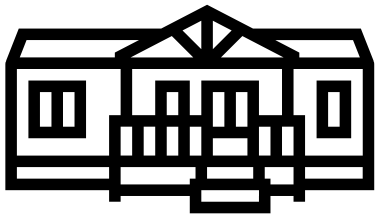
7. Windows

"There are tons of poor windows out there," and residents really want new windows. They have the most aesthetic impact and improve residents' sense of comfort, including reducing noise transfer and increasing security. But they are expensive relative to their energy efficiency impacts.

Retrofit Impacts

The estimated energy savings, return on investment, and other benefits of retrofits on manufactured homes show a compelling case for this work.[16]

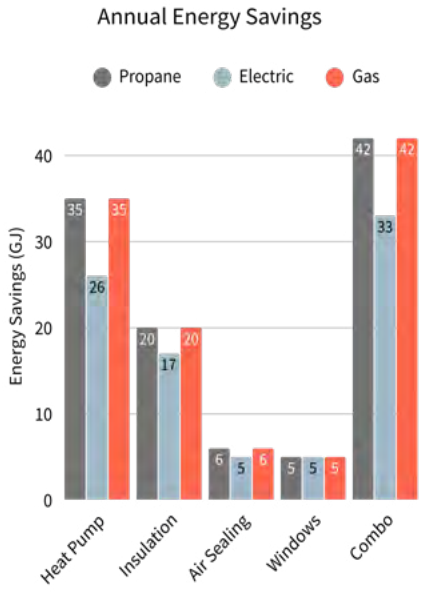
Initial Condition: A Typical Manufactured Home Before Retrofits

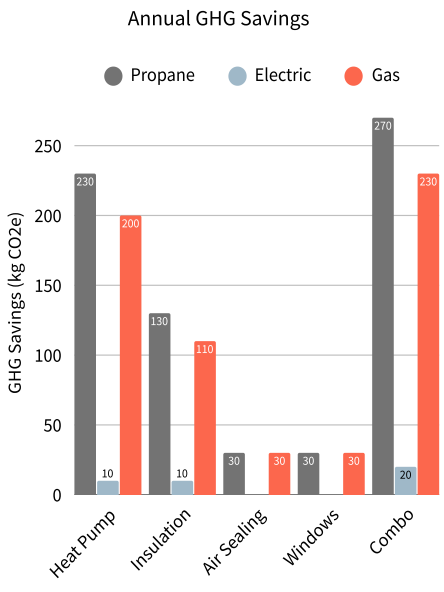


- 1980s construction
- R5 underbelly insulation (significantly damaged)
- R11 attic and wall insulation
- 8 metal-frame double-pane windows
- Air leakage of 3000CFM50
- Energy usage: 88 GJ for natural gas or propane; 79GJ for electric forced air.

Estimated upgrade costs, and a detailed outline of energy and cost savings can be found in Appendix D.

Retrofit Energy Savings and GHG Savings, by Incumbent Fuel Type

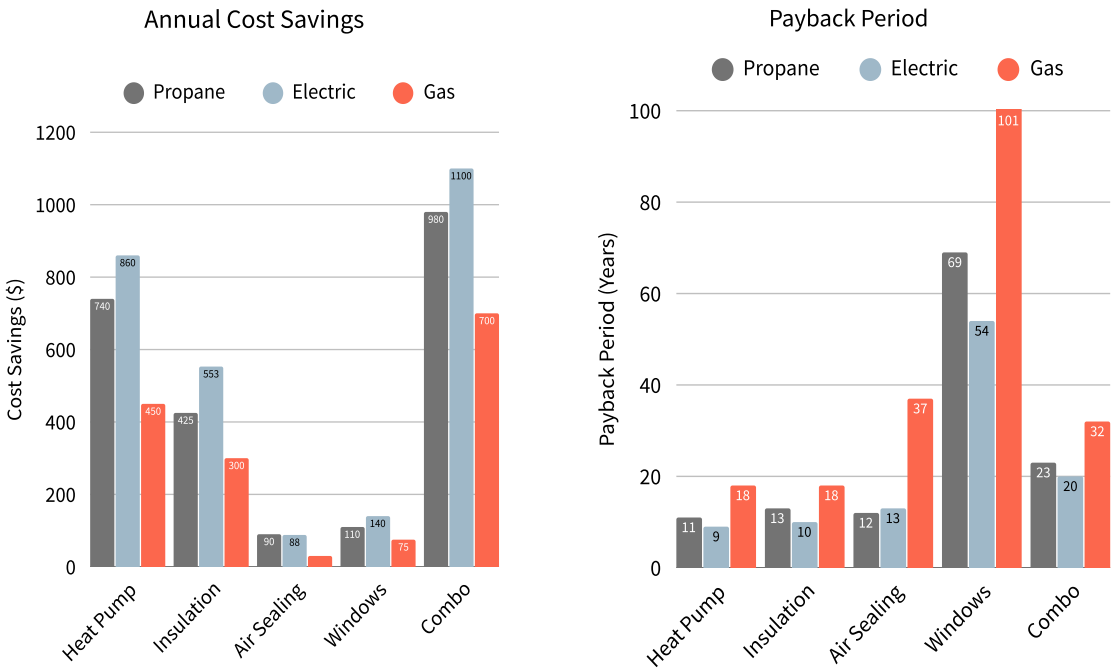




Changing from a fossil fuel heat source to a heat pump creates the most GHG savings. Insulation also has significant effects on energy savings and GHG reductions in homes heated by fossil fuels. Even in electrically heated homes, heat pumps and insulation significantly reduce energy use, which is still beneficial. **The combined retrofits decrease energy use by 42-48%, regardless of the original fuel type.** With proper upkeep, these annual savings will continue for the lifetime of the home.

16 These are generated from assumptions, based on data from Coastal BC and Vancouver Island. Actual costs and savings can vary significantly by primary heating fuel, local weather, and costs of materials and contractors in different jurisdictions.

Cost Savings and Payback Period (*without rebates*), by Incumbent Fuel Type



The combined cost savings generated by retrofits can significantly reduce residents' utility costs (for all heating types), and these savings are cumulative.

Windows are not justified in terms of financial payback, but they may still be worthwhile for the additional benefits of comfort, security and dignity. **Even with the cost of windows included, the combined retrofits pay themselves off – regardless of the home's incumbent heating fuel – within the timeframe that a manufactured home may foreseeably be inhabited.**

The payback is longest in a home heated by natural gas, because this it is a relatively cheap fuel—where it is available in BC. However, the extensive GHG savings for these homes help justify retrofits, as well as the health benefits associated with removing natural gas from homes.[xxx]

The high cost, energy and GHG savings that can be achieved through retrofits for propane heated homes (similar for oil) highlight the importance of supporting these homes switching to heat pumps—perhaps through the Energy Conservation Assistance Program. More discussion of this in the "Retrofit and Rebate Programs" section below.

Summary of Benefits Beyond Energy and Cost Savings

	Comfort	Health	Safety, Security, Dignity
Air Sealing	Fewer drafts.	Better air quality; temperature regulation.	Protection from rot and pests. Greater dignity thanks to accompanying repairs.
Insulation	Warmer floor, less temperature fluctuation.	Temperature statbility promotes health; better affordability reduces stress and avoids other trade-offs.	Improved protection from rot and pests, thanks to road barrier repair.
Heat Pump	Climate control in both hot and cold weather.	Comfortable temperature, better air quality and less moisture all promote health. Reduced stress and other trade-offs from significant bill savings.	Mitigate risk in case of extreme heat. Reduced energy insecurity improves dignity (e.g. actually using heat or cooling because it's not too expensive to run).
Windows	Reduced drafts and noise transfer.	Less mould. Better air quality, especialy when outdoor air quality is poor.	Enhanced home security. Aesthetic improvement may increase pride and dignity.

Supporting affordability, along with the benefits of increased comfort and safety, reduced stress and health costs, and improved air quality and dignity for residents, justifies the upfront costs of retrofits regardless of their payback period. Overall, these retrofits on manufactured homes have a huge effect on people's lives. So, what will it take to achieve these benefits for many more manufactured homes?

Retrofit Barriers

While the potential benefits are huge, the barriers to completing retrofits in manufactured homes are also extensive. The following list of barriers has been developed based on conversations with retrofit program designers and managers, contractors, park owners and managers, and residents, as well as results of an Ecotrust Canada contractor survey, and a manufactured home residents survey.

Summary of Retrofit Barriers by Category

Unique Characteristics of Manufactured Homes	**Demographics and Attitudes of Residents**
• Structural limitations for retrofits, due to shallow attic, 2*4 construction, and undersized ductwork. • "Not a pretty place to work - the contractor issue is real." • Additions on homes complicate retrofits. • Older electrical panels may have limited capacity. • Manufactured homes are treated as personal property; depreciation may make investments harder to justify.	• Upfront costs, even with rebates, are too high (92% of residents say this is either a huge or a medium barrier). Future servicing costs are also a concern. • Lack of knowledge and confidence about what retrofits would help or who to work with (69% say this is a huge or medium barrier). • Mistrust of government and utilities, mistrust of programs offering support, and negative response to being contacted unexpectedly or by unknown individuals. • Misconceptions or lack of knowledge about heat pumps. • Lower literacy and digital literacy rates limit outreach opportunities and application processes.
Manufactured Home Park Setting	**Big Picture**
• Residents require approval from park manager or owner for retrofits. • Park electrical capacity limitations – confirmed or suspected – are a major concern for park owners; some are responding by banning heat pumps. • Space is limited between units, and noise considerations for neighbours affect siting options for heat pumps. • Poor park management, or the possibility of park redevelopment, can reduce the perceived justification of retrofits and the capacity of residents.	• Availability of contractors – especially in rural areas. • Alternate cheap fuel options; promotion of natural gas. • Contractors' knowledge of HVAC applications. • Load-sharing devices not approved for use beyond EV charging. • BC Hydro's electrical distribution extension policy. • Stigma and bias against manufactured homes and parks, which may reduce access to support and protection at various levels.

More details about these barriers are included in Appendix E.

"When living on a below-poverty-level income, covering the bare minimum of pad rent, utilities, groceries and travel is already quite difficult—there are no monies left over for clothing or other necessities and definitely not for renovations of any kind."

– Survey participant

"I live in a seniors' park where most of the residents are not good at using online services or applications."

– Survey participant

"[The] park owner has decided that nobody else is allowed to put in a heat pump."

– Survey participant

"I worry that I will be taken advantage of by contractors as I was when I had my sundeck redone."

– Survey participant

This range of barriers is daunting, but there are many reasons to work on addressing them: to achieve the direct benefits of retrofitting manufactured homes; to improve the lives and experiences of residents, park owners and contractors along the way; and to apply the lessons learned in a way that may improve retrofit access more broadly in the province.

The remaining sections of the report will examine how these barriers can be addressed, by examining:

- Retrofit and Rebate programs,
- Other financing opportunities,
- Manufactured home park electrical capacity,
- Manufactured home park maintenance and management,
- Contractor capacity building,
- How to reach manufactured home residents.

Retrofit and Rebate Programs

Because cost is by far the biggest barrier identified for residents,[17] financial support for manufactured home retrofits is critical. And to address the unique situation of these homes—especially when set in manufactured home parks – rebate programs may need to be tailored to this specific application.

Existing programs are already addressing some of these barriers. With some adjustments and expansions, they can be even more effective.

Programs at a Glance

Program	Audience	Key Measures	Strengths	Limitations
ECAP (BC Hydro and Fortis BC)	Low-income households - manufactured home specific stream.	Enabling work, air sealing, insulation, ventilation, some heat pumps (BC Hydro only).	Free to participants. Program coordinates contractors and communicates with parks.	No fuel switching, and no heat pumps for Fortis participants.
ESP (Clean BC)	Income qualified households (3 income levels). Higher rebates for fuel switching.	Rebates for heat pumps, insulation windows and doors, electrical service upgrades, health and safety.	Pays contractors directly, prioritizes fuel switching, includes measures ECAP does not.	Some rebates do not cover full costs. Registered contractor availability limited.
PIEER (BC Hydro and Fortis BC)	Indigenous communities.	All kinds of energy efficiency upgrades. Tailored program.	Salary support for community members to install products and assess homes.	Some rebates lower than other programs. Limited capacity to access the program.

17 Of the 125 manufactured home residents who completed Ecotrust Canada's survey, 59% say that "upfront costs being too high, even with rebates" is a huge barrier, and an additional 33% say it is a medium barrier.

Energy Conservation Assistance Program (ECAP)

ECAP is funded by BC Hydro and Fortis BC and provides free product installation and energy coaching for income-qualified households. The basic program offers LED light bulbs, high-efficiency showerheads, and weather-stripping. Some households qualify for a new fridge or air conditioner.

Since 2018, ECAP has been developing a program specifically for manufactured homes, which offers more substantial support: installing insulation, ventilation, and (sometimes) high-efficiency heating and cooling, at no cost to participants.

Utility Streams: Depending on the manufactured home's electricity provider and main heat source, it is processed either by BC Hydro or by Fortis BC. Only participants who are BC Hydro customers and already have electric heat are currently receiving heat pumps.

Both utilities are testing or considering program expansions: looking at other housing types, window retrofits, and dual-fuel heat pumps.

Benefits of the manufactured home ECAP program include:

- Work is fully funded by the utilities – no cost to participants;
- The improvements can have a huge effect on people's comfort and health, and bills;
- The contractors and program delivery organizations inform, educate and negotiate with park owners/managers;
- The program serves approved households anywhere in the province;
- The program coordinates all aspects of the upgrade process (planning retrofit measures to take, deploying contractors, and covering payments), so it can support people with limited capacity.

Limitations of the manufactured home ECAP program include:

- Fortis participants do not receive a heat pump (no heating efficiency or added cooling benefits);
- No fuel-switching is built in to the program at all; currently, gas, oil and propane households do not get heating system upgrades of any kind.
- Neither window retrofits nor hot water heating are currently included;
- Additions (which are very common in manufactured homes) are mostly excluded;
- The timeline for retrofit work is fairly long (usually multiple months).

Analysis and Recommendations: The ECAP manufactured home retrofit program is providing relatively impactful/deep retrofits in a setting where they are badly needed (and thus effective), and in a way that supports people who otherwise would not be able to afford these retrofits.

So far, the program has completed retrofits for around 700 homes. Importantly, this has involved extensive program development and learning. To achieve the scale of impact needed, the ECAP program should be scaled up significantly:

- **Retrofit more manufactured homes**. Only ~1% have been reached so far, and there are many more homes in need.

  — More on expanding ECAP participation is under "How to Reach Manufactured Home Residents."

- **Expand work on other housing types**. The need and the potential savings justify retrofits in other types of housing. Plans to offer heat pumps through ECAP for other homes have recently been announced.[18]
- **Expand and adapt to include fuel switching and electrification,** in line with Powering Our Future: BC's Clean Energy Strategy.[xxxi]

18 Government of BC. April 9, 2025. B.C. makes heat pumps more affordable for people with low incomes. https://news.gov.bc.ca/32205

— This will require some program design changes: either new parameters on how homes are sorted (for example, some natural gas heated homes could be diverted to the BC Hydro stream), or new rules around what is required of the utilities (for example, Fortis could be compelled to complete electrification measures for homes in their stream).

— An interim step is for Fortis' to expand current pilots of dual fuel heat pumps. (But the provincial government should consider intervening on Fortis' requirement for units to switch to auxiliary (gas) heat at a 5 degree C setpoint, which is unnecessarily high and will cause unwarranted natural gas consumption and emissions.)

— At a minimum, homes currently heated by propane and oil should be considered for heat pump installations (at least where Park electrical capacity allows; more on this in the "Manufactured Home Park Electrical Capacity" section).

- Build **equipment servicing** into the program (by funding and scheduling follow-up visits), to ensure equipment is maintained even when servicing is unaffordable for residents.

Note: Participation in ECAP does not preclude a household from accessing the Energy Savings Program rebates described below (and proof of eligibility for ECAP qualifies as income verification for ESP). So, an immediate opportunity is for households to use ESP to switch from fossil fuel to electric heat either before or after participating in ECAP. However, this requires more initiative and organization on the part of residents, or more support from program administrators or community partners.

More details on ECAP income qualification, application process, and analysis can be found in Appendix F.

Energy Savings Program (ESP)

Formerly known as the Income-Qualified Program, the Energy Savings Program is run through Clean BC and funded by the provincial and federal governments. The program has three income qualification levels, with different rebate amounts (and percentages covered) depending on the level. The maximum coverage from the ESP is up to $44,900, and up to 100% of costs covered. **Upgrades must be installed by a program-registered contractor.**

Overall, **the Energy Savings Program prioritizes fuel switching** and rebate amounts reflect this. (Alongside non-income-qualified Better Homes rebates, ESP has already contributed to a significant uptake in heat pumps in the province.[xxxii]) For manufactured homes, the most relevant ESP rebates are for:

Heat pumps: Rebates can be accessed when ECAP does not offer a heating upgrade. Significantly higher amounts are offered for households switching from fossil fuel (often enough to cover the full upgrade cost).

Electrical service upgrade costs: These only qualify when accompanying a fuel switching upgrade. The maximum of $5000 is inadequate in a manufactured home park, where power lines are almost always underground.

Window and door upgrades: These are not currently included in ECAP. However, coverage (up to 95%, to a maximum of $9500 per home and $950 per window) does not cover the full cost of upgrades.

Heat pump water heating: These are not currently included in ECAP. Rebates up to $3500 should cover most, or all, of the upgrade cost, and generate ongoing bill savings.

Benefits of the ESP include:

- It pays contractors directly. (When programs require participants to pay upfront and then be reimbursed, they are either completely inaccessible or significantly less appealing to lower income households.)
- It includes upgrades not covered by ECAP (and not offered by past programs).
- The option for renters to apply (although with the building owner's consent).
- Allowing bulk applications, which are processed on a case-by-case basis. (Inquiries must be addressed to ESPBulkApplication@clearesult.com.)
- Allowing an endorser to confirm eligibility for the program, by verifying income. (For a list of qualified endorsers, see Appendix G.)

Limitations of the ESP include:

- Inadequate rebate amounts. For many categories of retrofits, the maximum amount is not enough to cover the full cost of upgrades. This can cause frustration and stress for both contractors and participants. For many households, even a small cost is prohibitive.
- Contractor availability can be a significant issue because participants must work with a program registered contractor. In many rural and remote areas, certain types of contractors are not available at all. Registered contractors may have long waitlists or their rates might be higher than the average for that area or upgrade.

Analysis and Recommendations

BC's focus on income-qualified rebate programs, and models that pay contractors directly, are aligned with provincial goals for reducing

emissions and increasing equity, improving health and alleviating poverty. However, even with the expansion of the ESP in Spring 2025, the program can still be made more impactful. Recommendations are:

- To improve contractors' experiences (and thus encourage contractor registration), the ESP should streamline paperwork submissions, provide responsive and accessible contractor support, and ensure timely payments. (More discussion of this in the "Contractor Capacity" section.)
- To support participants and prospective participants, the program must be well staffed, with quick and helpful responses on both email and phone. It may also be worth exploring creative outreach and support options beyond email and phone.
- For ESP participants (like ECAP), **equipment servicing** might be unaffordable and therefore get neglected. It's in everyone's interest for equipment to be kept in good condition. Funding and scheduling follow-up visits might be worth adding to the program.

For manufactured homes specifically, the ESP could be improved by:

- Removing the requirement for an exemption on use of existing ducts, since ducts are often inappropriately sized for a central heat pump system.
- Reviewing rebates for windows and either increasing the amount per window, removing the per-window limit (just using the overall limit); and ensuring contractors know that they can install qualified double-pane windows (triple-pane windows are often incompatible in a manufactured home).
- Increasing the health and safety rebate ($800), which may not cover the issues that can arise in a manufactured home retrofit project.
- **Allowing electrical service upgrade rebates to cover load-sharing devices, especially when service upgrades are not possible**.

The income and other requirements to qualify for the ESP, as well as the application process, the specific upgrades covered, and rebate amounts are all listed in Appendix F.

Partners in Indigenous Energy Efficiency and Resilience Program (PIEER)

The PIEER Program, funded through BC Hydro and Fortis BC, provides funding and support for a variety of energy efficiency upgrades in Indigenous communities. Because manufactured homes make up a large proportion of the housing stock on reserves, this program can help support their improvement.

Benefits of the PIEER Program are:

- A unique feature of this program is that it provides training and salary support to hire community members to install the products and assess for additional energy efficiency opportunities.
- PIEER offers higher rebate amounts than the Energy Savings Program for health and safety measures and ventilation.

Limitations:

- Unfortunately, PIEER's **rebate amounts for heat pumps are not sufficient** to cover the full cost of upgrades, making the program unsuitable for many households and communities. (Heat pump rebate amounts are lower than the ESP's amounts, while in many remote communities, installation costs are much higher).[19] As a result, either upgrades are not happening, or communities are choosing to use ECAP or ESP because of their higher rebate amounts, even though

19 For an overview of ICCP rebate requirements and amounts, see https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/power-smart/residential/programs/bchydro-iccp-product-rebate-requirements.pdf (as of April 2025).

PIEER is supposed to be tailored to their communities.

- For manufactured homes specifically, by splitting **insulation rebates** between roof, walls, and crawlspace, the rebate coverage specifically for underbelly insulation is inadequate, even though these are key measures for improving efficiency and comfort.
- Limited **administrative capacity** for many Indigenous governments also affects uptake of the program. (In consideration of this, support programs like Ecotrust Canada's Community Energy Initiative could be instrumental for communities to tap into these benefits.)

Analysis and Recommendations

PIEER has the potential to be an empowering and impactful community program. Rebate amounts should be increased, especially for heat pumps, in line with the expansion of the Energy Conservations Assistance Program. PIEER should also provide funding for administration at the community level.

The PIEER model of partnering with a community for bulk upgrades, engaging community members in the work, and using a partner organization like Ecotrust Canada to help enable these initiatives could offer interesting lessons on what an empowering community program could look like in manufactured home parks. (More in the "How to Reach Manufactured Home Residents" section.)

Overall, these existing rebate programs help to address many of the barriers to supporting manufactured homes; adjusting and expanding them can make them more impactful. The following sections will examine how other outstanding retrofit barriers can be addressed.

Other Financing Opportunities

Since cost is the largest barrier for manufactured home residents, funding options beyond rebates are also worth examining—both for work that does not qualify for rebates and for retrofit costs that exceed the rebate amounts. A few existing or potential options that could help manufactured home residents are:

- Canada Greener Homes Loan,
- Property Assessed Clean Energy (PACE) Financing,
- On-bill Financing,
- Solar Assistance.

These financing opportunities are described and discussed in Appendix F.

Manufactured Home Park Electrical Capacity

For major home retrofits, residents usually require permission from their park's owner, as well as the usual permits. *For an explanation of how park rules and tenancy agreements can restrict retrofits, see Appendix H.*

Besides retrofit costs, concern over manufactured home park electrical capacity is the most urgent barrier to manufactured home retrofits.

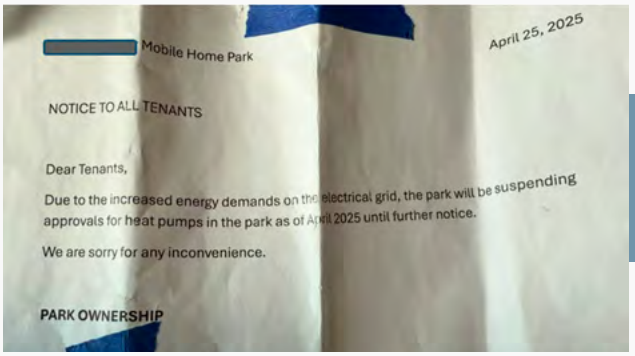
Typically, manufactured home residents are customers of BC Hydro (or another electric utility). They have their own meter and pay their electricity bills directly, which makes qualifying for rebates easier. But the infrastructure that distributes electricity across park property to each individual unit is owned by the park. (Usually, this includes powerhouse(s) and feeder lines, which are almost always underground.)

When it comes to retrofits, park owners' biggest concern is that their park's electrical capacity may become strained and need to be upgraded, according to conversations with the MHPO and several park owners. The expense of upgrading park electrical infrastructure is very high. (For example, an estimated $1 million for upgrading infrastructure in a 100-home park that currently has 60 amps per unit.)

In some cases, park owners are blocking all new heat pump installations.[20]

To address this:

- Park owners need information to make informed decisions;
- It's worth considering opportunities for avoiding infrastructure upgrades;
- Where upgrades are necessary, park owners need financing support or clarity on how they can recoup costs.


[redacted] Mobile Home Park

April 25, 2025

NOTICE TO ALL TENANTS

Dear Tenants,

Due to the increased energy demands on the electrical grid, the park will be suspending approvals for heat pumps in the park as of April 2025 until further notice.

We are sorry for any inconvenience.

PARK OWNERSHIP

Information on Electrical Capacity for Park Owners

Park owners need support from a professional, such as an electrical engineer, to determine the current peak demand in their park and the capacity of their existing electrical infrastructure. This can be used to inform decisions about service upgrade requests or new equipment installations (like heat pumps and EV chargers), to identify ways to reduce demand, and to determine whether infrastructure upgrades are needed for safety or increased capacity.

Park owners should not impose heat pump bans without evidence from a completed park electrical capacity assessment, or plans to have an assessment done within a short timeframe. It is worth considering how to support park owners in this work. Here are some programs that are currently available, or that could be extended for this purpose.

20 This is reported to be the case for 9% of the parks represented in Ecotrust Canada's residents survey responses; several more examples have come to light through the course of this research.

TOOL OR PROGRAM	RATIONALE	NEXT STEPS/ WHO SHOULD ACT
MURB Opportunity Assessments[21] • Provide up to $5000, paying a consultant directly. • High-level assessments identify projects that would improve energy efficiency and reduce reliance on fossil fuels, such as heat pumps, solar panels, battery storage, and EV charging readiness. • **Does not currently apply** to manufactured home parks	There are similarities between parks and MURBs, including privately owned electrical infrastructure; a version of this program could support park assessments.	**Clean BC** should consider extending opportunity assessment funding to manufactured home parks, either broadly or on a trial basis.
Peak Load Portal • A tool developed by BC Hydro to help MURBs access information about building-wide electrical consumption (to inform opportunity assessments). • **Manufactured home parks can already use this portal** if they have five or more units, and all units have the same street address.[22]	Where applicable, this tool can provide valuable insights about the actual consumption in a park, and whether concerns about electrical capacity are warranted.	**BC Hydro** and the **MHPO** should share information about the Peak Load Portal with park owners as soon as possible.
Electrical Planning Reports • **Strata corporations** are required to obtain an electrical planning report within the next few years.[23] • To help owners understand current electrical capacity and plan for increased demand (including EV charging and heat pumps). • Stratas must pay for EPRs themselves.	This is an interesting precedent for an **imposed planning process**, which could be applied to manufactured home parks.[24]	The **Ministry of Housing** should examine effectiveness in bare land stratas and consider extending this requirement to parks. (And consider offering financial support.)
City of Nanaimo Capacity Scans • Project in development. • Municipal grants will help pay for park electrical capacity scans.	Results will inform whether upgrades are necessary, and how the city can support more parks in their region and beyond.	**Nanaimo** intends to share learnings with stakeholders.

21 Introduced in September 2024, the MURB Program is a partnership between BC Hydro and the Government of B.C. It provides rebates for a variety of upgrades and electrification initiatives in Multi-Unit Residential Buildings. See https://www.bchydro.com/powersmart/business/programs/multi-unit-residential-buildings/assessment.html.

22 The application process is through an online form. A contractor or consultant would need authorization from the park manager or owner to request this data. See https://app.bchydro.com/accounts-billing/rates-energy-use/access-load-data/request.html

23 By December 31, 2026 for Metro Vancouver, the Fraser Valley and the Capital Regional District, or by December 31, 2028 for the rest of the province.

24 VISOA helped to develop the EPR guidelines. They recognize this is an extra cost and burden for stratas, but they are pleased that it will inform future decision making in stratas. VISOA has useful resources on their website, both for strata owners and for contractors working on these reports. Some manufactured home communities that are bare land stratas are currently going through this process. See https://visoa.bc.ca/resources/about-electrical-planning-reports/

Avoiding Electrical Upgrades – Optimized Electrification and Load Management

Often, to allow full electrification of a home, the existing electrical service connection is increased to meet an increased need for peak electrical power. However—as in a manufactured home park—if many buildings upgrade, the neighborhood infrastructure must also be upgraded, making electrification more costly (and adding emissions through infrastructure upgrades). **The underground infrastructure typical of manufactured home parks makes this even more of a challenge.**

Optimized Electrification[xxxiii] means minimizing or eliminating the need to increase existing service, while still doing deep energy retrofits. Some ways to reduce the peak electricity that a home draws from the grid are:

- Replacing appliances with more efficient electric versions;
- Reducing how much energy is needed to heat the space through retrofits;
- **Using *load share devices*, where needed, to connect two loads to one circuit breaker,** allowing residents to use either piece of equipment at any time, but not both at once.
- Or, by using a smart electric panel, which allows homeowners to monitor each individual circuit on the panel and use software to set or limit the total peak load.

These options could help avoid electrical infrastructure upgrades in manufactured home parks—especially when the existing service to each home is 60 or 100 amps. A customer guide from BC Housing, provides explanations and guidance for homeowners on this topic.[xxxiv]

Currently, load sharing devices are only approved for use with EV chargers in BC. However, Technical Safety BC can issue a variance to allow their use for other applications, at the recommendation of an electrician.[25]

Some further data and comments on load sharing devices from electricians and HVAC installers are in Appendix I.

To advance this potential solution will require:

- **Broader approval of load sharing devices** (already the case in the United States),
- **Adding rebate funding for load sharing devices** to existing rebate programs in BC (currently very minimal coverage is available, for EV changing only). This could be achieved by allowing ESP electrical upgrade rebates to cover load sharing devices.
- More testing and analysis for the optimal uses for these devices.
- More training for electricians about load sharing and about heat pumps.

There is also work already underway to reconsider **how electrical loads are calculated**, since residential electrical demand is often overestimated. BC Hydro is involved with a Canadian Electrical Code project, which will address some of these issues, but the new code will not be updated until 2027.

An opportunity for Electric Vehicle charging, in parks where electrical capacity is limited, is that park owners might consider **adding a new electrical service specifically for the installation of level 2 or 3 EV chargers for common use**. This could reduce the demand for individual households to add car charging to their existing home electricity demand.

25 The ECAP program has installed around 15 devices in manufactured homes already. Many more have been installed by contractors outside the ECAP program.

Paying for Park Electrical Infrastructure Upgrades

In many cases, park infrastructure upgrades may be avoidable, while still enabling retrofits. Even if there is no capacity available for service upgrades to homes, it is often possible to install heat pumps and other electrification measures, using load management devices, if necessary, in homes with at least 60 amps.[26]

However, in a few cases, the results of a park electrical capacity study may show that upgrades are required or recommended – either because aging infrastructure was already damaged or strained, or because demand increases are considered inevitable. (For example, approximately 2% of resident survey respondents report having only 30 amps of electrical service to their homes.)

In these cases, who should pay for this work? Park owners have expressed that they need financial support or financing clarity to proceed with upgrades. Here are some potential avenues for supporting upgrades:

26 Data is not available on the proportion of manufactured home parks with different service levels, but out of 125 resident survey respondents, over 50% already have service of 100 amps, and another 17% have 200 amps.

Tool or Program	Rationale	Next Steps/Who Should Act
MURB rebates for electrical Infrastructure upgrades Funding of $130/ tCO2e of lifetime GHG savings. (Amounts are based on electrical load analysis and only apply in cases of fuel switching.) **Does not currently apply** to manufactured home parks.	Using the GHG savings above, a bulk installation of 30 heat pumps in a park could save ~1035tCO2e, which would translate to $135,000 toward electrical upgrades. The MURB program sets a precedent for recognition and support for energy savings by enabling capacity upgrades.[27]	**Clean BC** should examine whether the MURB program could be extended to manufactured home parks, at least on a trial or case-by-case basis. (This could potentially also help multiplexes and side-by-side rowhomes or townhomes who also aren't eligible for the MURB program).
Pilot funding through Clean BC Whether this would lead to a new funding stream, like the MURB program, or be handled on a case-by-case basis could be assessed after a pilot.	Because retrofits to manufactured homes represent a significant fuel switching and affordability opportunity, and align with many provincial goals, there is a strong case for Clean BC to consider pilot funding for electrical infrastructure upgrades in a community that badly needs them.	**Clean BC** should consider funding for electrical upgrades in parks with a demonstrated need, at least on a trial basis.
RTB approval process Another option for financing park infrastructure upgrades is to pass the costs on to the park's tenants through additional rent increases, when approved by the Residential Tenancy Branch. **The drawback of this arrangement is decreasing affordability for tenants.**	Park owners would like to know whether they will be approved to pass on costs to their tenants before doing the work, but currently the RTB does not assess a case until after it has been paid for.[xxxv] Park owners would also like to have the option of doing upgrades in phases (and applying additional rent increases in phases also).	The **Ministry of Housing** should assess these options as part of work to improve and increase resources for the RTB. However, they should consider whether or not these are aligned with the Homes for People Action Plan's goals.
Conditions of sale Municipalities may be able to use a Section 219 Covenant (Land Title Act) to make requirements of a new owner upon sale of a property.	When a park is sold, it could be an opportunity to require upgrades from the new owner – including electrical infrastructure upgrades.	More research is needed on the feasibility of this. **Nanaimo** could consider including this in their capacity scan project.

27 The "workbook" developed for MURB retrofit data collection could also be adapted to calculate and fund multi-unit projects in manufactured home parks and other multi-unit settings. Refer to "Required documentation for custom projects" at https://www.bchydro.com/powersmart/business/programs/multi-unit-residential-buildings/rebates-equipment-upgrades.html

Electrification Support more broadly BC Hydro is making major investments to expand trans-mission infrastructure and connect new customers. BC Hydro has a mandate to accelerate the electrification of B.C.'s economy and support CleanBC goals.	BC Hydro's extension distribution policy was recently updated[xxxvi] to reduce costs for new connections, but for individual home or park upgrades, the current process can saddle one person (or park) with 100% of infrastructure upgrade costs that they trigger (like transformer upgrades).	According to BC Hydro, they are gradually moving in the direction of better distribution equity, but more attention from the **provincial government** would help.

Manufactured Home Park Maintenance and Management

Parks in disrepair, inconsistent or absent managers, or threats of eviction or redevelopment reduce the justification and the potential gains from retrofits. These are part of a bigger issue related to the park "land-lease" model.

"Our neighbours are amazing. Park management is not. Management bullies and dictates instead of listening to mobile home owners. Complaints have been made against park manager and owner refuses to do anything about him. Complaints to the owner have gone unacknowledged."

– Survey participant

"As with many mobile home parks, our private owners do not want to spend more money than they absolutely have to on maintenance. The roads are abysmal, covered with potholes."

– Survey participant

"Park management used to be very easy going - under new ownership, they seem to have a mandate to clear the park for redevelopment."

– Survey participant

An unexpected benefit of focusing on retrofits for manufactured homes could be bringing to light some of these issues and potential solutions. Promoting and investing in park improvements can contribute to improved community resilience and wellbeing.

The scope of this report did not allow in-depth review of this issue, but some potential avenues for addressing these barriers (and reducing their negative effects more broadly) are considered briefly.

On a broad scale:

- **Municipalities can use manufactured home park bylaws, or "standards of maintenance" bylaws** to enforce park upkeep. Although municipalities are often short on resources, and, where these standards do exist, enforcement is usually complaints-based, this is still one way to improve conditions in parks. Promoting increased greenery and recreation space in parks can also support passive cooling, stormwater management, improved resident wellbeing, and increased property values (and thus municipal taxes).
- The provincial government can follow through on its commitment to improve the **Residential Tenancy Branch's processes.** These are known to be long and arduous and can result in reprisals against tenants.[xxxvii] The provincial government's Homes for People Action Plan includes a commitment to "invest $15 million over three years to hire and train more RTB staff, so tenants and landlords can have their cases resolved quickly". This work is already underway, and the situation is improving. The action plan also mentions that the government will be "examining other ways to cut down on unlawful evictions and strengthen the security of tenants."[xxxviii]
- The **RTB could allow for group complaints.** This could make the process more accessible, less risky, and more effective for multiple complainants.
- **A provincial mandate that heat pumps cannot be banned** is another possible approach to support residents' rights to efficient heating as well as cooling, and enabling energy efficiency retrofits.[28] (Fast-tracking the initiatives in the "Electrical Capacity" section may need to accompany this.)
- **Funding and attention for organizations** who support and advocate for tenants in general – and manufactured home owners specifically – would give these organizations more capacity to help residents who face issues in their parks and to advocate for solutions.

- On a smaller scale, **supporting and educating individual park owners and managers** can help to convince them that supporting retrofits is in their interest:

- The **MHPO** can share stories from park owners who have had positive experiences and good outcomes with retrofits on their properties.
- Experienced **contractors** can help to reassure and inform park owners and managers about their concerns over heat pumps, electrical demands, and disruption from construction. This is already happening through the ECAP program.
- BC Hydro, Fortis BC, and community partners can help to **clarify the benefits of retrofits to park owners**. These include healthier and happier residents, who care more for their park; increasing the value of the park; getting better reviews and potentially gaining acknowledgement for their efforts; improving the image of manufactured home parks and support for parks more broadly in the province.
- The MHPO, MHOA, MHABC, Clean BC, the utilities or other organizations could recognize, celebrate or even reward parks who successfully support significant home upgrades with awards, positive media attention, or gifts of some kind. (This could also be applied to other rental properties.)

28 Arizona state passed a law in 2024 specifically protecting manufactured home owner's rights to install cooling, both for energy cost reduction and health reasons. See State of Arizona, HB 2146 at https://www.azleg.gov/legtext/56leg/2r/bills/hb2146p.htm

The possibility of parks being **sold or redeveloped** also limits retrofits, and threatens this affordable housing source. Options to mitigate this may include:

- Restricting redevelopment through municipal zoning (although stigma is an issue and some municipalities would prefer to have parks redeveloped),
- Making the Manufactured Housing Act's provisions for tenants in cases of redevelopment even more robust and generous;
- Encouraging municipalities to develop relocation strategies that protect and support evicted tenants;
- Controlling what cost increases or service reductions a new owner can impose;
- Using the sale of a park as a trigger to require improvements and upgrades;
- **Supporting and encouraging the purchase of parks by local governments, non-profit housing providers, or residents** (for example, using the model of resident-owned communities, where residents are supported to take over their park's ownership).

Resident-Owned Communities

In the United States, residents at over 1,000 manufactured housing parks have jointly bought their land, creating resident-owned communities. This cooperative model gives residents control over their homes and neighborhoods. "Resident-owned parks preserve affordability and help residents address their own problems, including vulnerability to climate-driven disasters."[xxxix]

For more on resident owned communities, see Appendix J.

Contractor Capacity

Contractor capacity is a barrier to manufactured home retrofits and also to addressing the province's housing crisis and climate goals more broadly. This section will examine some opportunities to provide **training and incentives to increase contractor capacity to deal with the unique constraints and challenges of manufactured homes.** These initiatives might help in the bigger picture, too.

The **Home Performance Contractor Network** (HPCN) is a "database of retrofit contractors in British Columbia that meet specified trade designation and training qualifications and are subject to ongoing review and quality assurance checks". Membership in the HPCN is a mandatory eligibility requirement for many of BC's rebate programs.

Because the HPCN already provides contractor training, certification and incentives, this network could be an effective avenue for engaging contractors with manufactured home-specific training as well as incentives.[29]

The HPCN is managed by the Home Performance Stakeholder Council (HPSC). Many of these actions are already in the HPSC's strategic plan, so support and advocacy for these measures to be undertaken quickly, and with manufactured homes in mind, could help. Some other organizations also have a role to play.

29 Home Performance Contractor Network. https://homeperformance.ca/about-the-network/

Training, Accreditation, and Specifications

Program or process	Rationale	Next steps/Who should act
Residential HVAC trade or certification in BC. The HPSC has already developed an HVAC Roadmap.	This could help ensure quality heat pump installations in parks, avoiding the risks of noise complaints or poor user experiences that undermine future retrofit opportunities.	The HPSC is awaiting further direction from the **Province of BC** regarding next steps.
Manufactured home specific training.	To help contractors deal effectively with these unique structures.	Include this in the **HPSC's** existing goal to "review and update HPCN training."
Directory of contractors who are experienced with manufactured homes.	A request from manufactured home residents.	The **HPCN** could potentially add this as a category in the HPCN search engine. Or the **MHABC** could take this on.
Increase licensed electricians' knowledge of heat pumps (and keep them up to date on new best practices for load calculations and updates in the electrical code).	Heat pumps are critical equipment for improving efficiency and resilience across the province's buildings, but they are not always well understood by electricians. (And have specific provisions in the electrical code.)	Electricians are licensed by Technical Safety BC. **TSBC** could encourage (or require) additional training on this topic. The **Canadian Standards Association** could also make their training sessions free and compulsory. **Post-secondary** training programs for electricians (e.g. BCIT and Okanagan College) should provide more information on HVAC applications.
Specifications for work on manufactured homes in the context of BC.	Informal trainings (like CEA's webinar series with Ecolighten) are helpful, but there are no official guidelines, and contractors are left to muddle their way through, or to use American resources.[30]	**ECAP's** manufactured home specifications could be released for reference, or developed into more formal guidelines for the province. (Although ECAP's work does not currently cover all aspects of manufactured home retrofitting.)

30 Like the National Renewable Energy Lab's Work Standards https://sws.nrel.gov/spec/501083.

Contractor Recruitment and Rebate Program Improvements

Program or process	Rationale	Next steps/Who should act
Recruit and register more HPCN contractors, especially in rural areas.	To increase availability of contractors for rebate-qualified retrofits where manufactured homes are located. To increase accountability for contractors' rates.	**HPSC** is already developing a rural and northern outreach plan in 2025. Both the **HPSC and the provincial government** should consider this a priority, including developing new incentives.
Rebate program process improvements, so they work well for the contractors doing the work.	Programs must provide excellent support to contractors, minimize and streamline paperwork, and make timely payments to keep contractors engaged. Otherwise, this could counteract recruitment efforts.	**Clean BC** must enforce these expectations with their delivery agents.
Further compensation for travel or other rural incentives.	A "northern top up" is already offered by the ESP, but this does not help in southern BC's many rural communities that are underserved by contractors.	Incentives could be added directly to contractors through the **ESP.**
Allowing and promoting bulk applications in manufactured home parks (both ESP and ECAP).	This could help address contractor availability by making contracts (and travel, when necessary) more worthwhile. It could increase contractor knowledge of this housing type, and reduce the stress that residents feel about finding contactors.	**CleanBC** should promote bulk ESP applications. The **utilities/ECAP** should allow bulk applications. **Community partners** can help manage bulk projects.
Including equipment servicing in the ECAP and ESP programs.	In case of equipment issues, rebate program support can reduce tension between customers and contractors.	**CleanBC and utilities (ECAP)** should consider adding servicing support to their programs.

Other Creative Capacity Building

Program or process	Rationale	Next steps/Who should act
Train and engage BC's Youth Climate Corps. Workers could be trained to complete certain aspects of retrofit work. For example, they could install weather stripping or help with underbelly insulation on every participating home.	Especially on a bulk project in a manufactured home park, workers could be trained and overseen by experienced contractors. The BCYCC already subsidizes pay. This could also raise the profile of the trades for careers and for climate mitigation.	**ECAP, Clean BC or a community partner** could engage with **BCYCC** and set up a pilot program.

How to Reach Manufactured Home Residents

Strategies for making contact with residents to inform them about retrofits and available support, and **guidance** through the retrofit process are both needed to help achieve the benefits of manufactured home retrofits. These could be provided by retrofit programs, contractors, park owners, and/or community organizations.

Promoting the Energy Conservation Assistance Program

ECAP is the best program currently available for supporting manufactured home residents who are income qualified, because it covers all the retrofit costs, retrofit planning and execution, and park owner engagement and negotiation.

However, both utilities have expressed difficulties in reaching participants and a desire to expand program outreach.

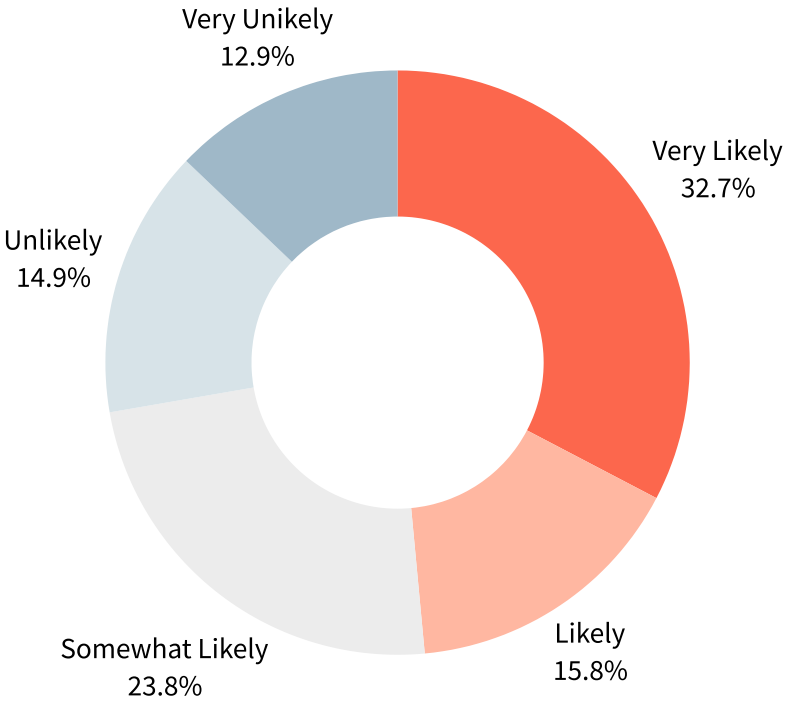
- A minimum first step is to **clarify online information about the program**. Keeping program information up to date would support the program by:
  - —Giving it more legitimacy. (When people hear about it, but cannot find information online, this can create skepticism and confusion.)
  - —Providing clarity to potential participants. (For example, those who look up rebates on Clean BC's website and are directed to BC Hydro's ECAP page.)
  - —Providing clarity to potential champions or promoters of the program – like Ecotrust Canada's Home Energy Savings Program, the MHOA, or park owners and managers.
- Another simple opportunity is to **share information about the program with organizations** involved in the manufactured housing industry, in retrofit coaching, in community health, and in municipal governments,[31] including clear information about who can qualify, what they will get, and how they can apply.

Bulk/ Community Approach

Using a bulk approach in manufactured home communities could bring great benefits in terms of program recruitment and efficiency. This is similar to NRCAN's Greener Neighbourhoods Pilot Program, currently underway, which aims to validate the benefits and business cases of aggregated deep energy retrofit approaches. (The Energiesprong model accelerates the pace and scale of retrofits by aggregating similar homes and buildings in a neighbourhood to create mass demand for deep energy retrofits.)

For ECAP, this could mean first allowing and then promoting bulk signups in parks. (Perhaps it would even be worth relaxing ECAP's income qualification level to allow more residents in a particular park to qualify; this could be tested on a pilot basis.) Alternatively, a bulk approach could combine ECAP and ESP rebates, since the ESP already allows bulk applications. A facilitating organization – whether Clean BC, the utilities, provincial program delivery agents, or another partner organization – would be needed to help facilitate promotion, education, and collecting and sorting applications for this approach.

31 Some examples include: MHABC, MHOA, MHPO, VISOA for a start, plus Ecotrust Canada, Community Energy Association, BC Non-Profit Housing Association, BC Healthy Communities, Better at Home, Union of BC Municipalities, etc.



How likely would you be to participate in a community program that would help you and your neighbours improve your homes' energy efficiency?

Among resident survey respondents, over 50% said they would be *likely* or *very likely* to participate in a community program that would help them and their neighbours to improve their homes' energy efficiency.

Community Partner Model

An approach with significant potential for manufactured home parks is a community partnership model, to overcome the park setting barriers, as well as the challenges of reaching manufactured home park residents.

An organization that already has contact (and trust) with the residents in a manufactured home park could be invaluable to enabling retrofit work. (This could be the park manager or owner in some cases, or a senior's program, a health program, or another community connected organization.)

One option is to empower the partner organization with information and resources to promote and support program enrollment (such as for the ECAP program).

An approach that would likely produce greater outcomes would be a joint effort, where the connected organization provides a trustworthy introduction to a community, or to individuals in need in that community. (Ideally, the connected organization could also provide income endorsements, streamlining the process even further). Then a **specialized delivery partner** – directly or indirectly linked to the program – would take over the promotion and sign-up process from there.

In either case, finding a way to value these organizations' efforts is both sensitive and important. This could likely be built in to the ECAP program's budget; increasing the capacity of the delivery partner would enable further impacts.

Owners and Mangers

Whenever possible, getting the park owners and/or managers on board makes the retrofit process smoother. Sometimes they are great champions for retrofits and a great resource for spreading the word about rebate programs to their residents. Rebate program agents or a delivery partner organization can support this by assuaging managers' or owners' fears and employing messaging to convince them that retrofits of the homes in their park are in their interest; and by leveraging their support to promote information sessions, collect applications, or potentially even sign endorser forms.

Education for Residents

Initiatives that reach residents in person, in their park have the highest potential. A potential model is that of Ecotrust Canada's Home Energy Support Program, which provides building science and rebate program information sessions, as well as a concierge service to support people through the retrofit process. This process could be adapted and streamlined to provide information and support specifically for manufactured homes and the retrofits and rebate programs that are directly related to them. Ecotrust Canada has learned that focusing messaging on bill savings and comfort is most effective.

Nanaimo's Retrofit Guide for Residents

A manufactured home residents' guide to retrofits and rebates, developed by the City and Regional District of Nanaimo, has just been published. It will be distributed to manufactured home parks in their region and shared with other municipalities, as well as being posted as an online guide: https://www.nanaimo.ca/green-initiatives/climate-action/green-buildings/green-manufactured-homes

Summary of a Manufactured Home Retrofit Journey

Here is a summary of the steps involved in completing and expanding the uptake of retrofits in manufactured homes, recapping the major barriers and opportunities at each stage.

Awareness and Interest

How do residents know about retrofit benefits and support programs?

- Barriers: misinformation, low digital literacy, mistrust.
- Strategies: outreach, community partnerships, bulk approaches.

Planning and Paying

Support with costs and guidance through the process can overcome the biggest barriers for residents.

- ECAP and ESP are great, but need expansion. Community partners can help.

Permission from Park Owners

Park owners are worried about electrical capacity limitations; some are blocking heat pump installations.

- Barriers: lack of information among park owners and electricians, high upgrade costs.
- Strategies: support park capacity assessments, expand knowledge of HVAC and load sharing devices, promote retrofit benefits, and support for necessary upgrades.

Doing Retrofit Work

Contractors must be available, willing, and knowledgeable.

- Barriers: lack of HVAC knowledge, shortage of contractors in rural areas, lack of MH training and resources, and structural challenges.
- Strategies: contractor recruitment, incentives, and training; creative initiatives.

Addressing Other Issues

Poor management and park redevelopment threaten affordability and retrofit success.

- Municipal bylaws and zoning, RTB improvements, legislation, and promoting non-profit park ownership could all help.

Spreading the Word

To reach more residents and parks:

- Promote success stories, learn from pilots, use bulk processes, partner with community organizations and park owners.

Changing the Paradigm

Focusing on MH retrofits can help shift assumptions in the big picture:

- *Optimized* electrification;
- Disincentivizing natural gas;
- Valuing health and dignity;
- Promoting affordability and empowerment in housing.

Conclusion

There are many reasons to expand and improve efforts to retrofit manufactured homes in British Columbia. Because of the nature of these homes, the potential energy savings are substantial, so this work can contribute effectively to meeting BC's emissions reduction targets for 2030 and beyond.

Beyond emissions and energy savings, the reductions in energy poverty and improvements to residents' health and wellbeing are even more meaningful. These may be particularly impactful in this type of housing, because of the high rates of energy poverty and unhealthy conditions that are common in these homes.

Through a wider lens, focusing on manufactured home retrofits may bring about improvements in the manufactured home park setting, which is an important source of affordable housing in BC. If sufficient action and learning take place, it could strengthen and improve this existing affordable option, as well as informing work in other affordable settings, and perhaps revealing interesting new possibilities for expanded affordability.

To achieve these benefits, the major recommendations of this report are:

Administration of Provincial Rebate and Retrofit Programs (Clean BC, Utilities)

- Expand BC's Energy Conservation Assistance Program, by:
  - —adding fuel-switching support and providing heat pumps to all participating homes,
  - —increasing the number of manufactured homes reached, through enhanced promotion strategies and use of community partnerships and bulk processing.
- Adjust the Energy Savings Program to better support manufactured homes, by:
  - —allowing electrical upgrade rebates to be used for load sharing devices,
  - —increasing the maximum rebate amounts for health and safety measures, and dropping the requirement for contractors to seek duct exemptions in manufactured homes,
  - —improving support and timely payment processes for contractors.
- Improve the Partners in Indigenous Energy Efficiency & Resilience Program by increasing rebate amounts for heat pumps and insulation.
- Consider extending multi-unit residential building (MURB) opportunity assessment funding to manufactured home parks, to support park owners to be informed about park electrical capacity.

Technical and Training (TSBC, HPSC, BC Hydro, MHABC)

- Approve load sharing devices for uses beyond EV charging.
- Present about BC Hydro's Peak Load Portal to the Park Owners Alliance, to support park owners finding information about park electrical capacity.
- Advance the Home Performance Contractor Network's work to recruit and incentivize skilled contractors doing retrofit work, especially in rural areas.
- Increase training for electricians on HVAC applications.
- Develop and release specs for manufactured home retrofits in BC.

Policy and Regulation

- Improve the Residential Tenancy Branch's processes, and allow group complaints.
- Consider legislation to block bans on heat pumps. (Accompany this with education on load sharing devices for park owners and electricians, and support for infrastructure upgrades where needed.)
- Consider requiring electrical planning reports for parks.

Community (MHPO, BCMHOA, Utilities, Community Organizations)

- Promote retrofit success stories and educate park owners on how supporting retrofit work can benefit them.
- Pilot community retrofit programs in manufactured home parks, to refine strategies for resident outreach and test a community partner model.

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Appendices

Appendix A – Manufactured Home Park Tenancy Act

When a tenant owns their home and rents a site in a Park, this tenancy is governed by the Manufactured Home Park Tenancy Act. (Except for tenancies on reserve lands, where the BC court of appeal has held that the MHPTA does not apply.) Some important provisions in the Act include that:

- A landlord must "provide and maintain the manufactured home park in a reasonable state of repair, and comply with housing, health and safety standards required by law".
- A tenant must "maintain reasonable health, cleanliness and sanitary standards throughout the manufactured home site" and "must repair damage [...] caused by the actions or neglect of the tenant". (A tenant is not required to make repairs for reasonable wear and tear.)
- Dispute resolution services are provided by the director, who is responsible for the administration and management of all matters and persons appointed or retained under the Act. The director must "act in a manner that is accessible, timely and flexible, and recognizes any relationships between parties to a dispute that will likely continue after proceedings under this Part are concluded."
- Rent increases require at least 3 full months' notice, can only be made once every 12 months, and must be within the yearly rent increase limit, as set by the Residential Tenancy Branch (for 2025 it is 3%).
- Ending a tenancy can happen with notice from the tenant or landlord, because of non-payment of rent, or for one of the following "causes":

  —unreasonable number of occupants on the site,

  —significantly interfering with or unreasonably disturbing another occupant or the landlord, or seriously jeopardizing health or safety,

  —engaging in illegal activity causing harm or adverse effects,

  —causing extraordinary damage (or not repairing damage to the site in a "timely manner"),

  —assigning the tenancy agreement or subletting without consent of the landlord.
- Tenants may dispute a notice by making an application for dispute resolution within 10 days after the date the tenant receives the notice.
- Ending a tenancy can also be for redevelopment: "if the landlord has all the necessary permits and approvals required by law, and intends in good faith, to convert all or a significant part of the manufactured home park to a non-residential use or a residential use other than a manufactured home park."

  —In this case, at least 12 months' notice is required, and the landlord must pay the tenant $20,000, on or before the effective date of the notice. The tenant can also apply for additional compensation equal to the most recent assessed value of the tenant's home if the home cannot be moved. And the Landlord may have to pay an additional prescribed amount ($5000 or 12 months rent) if "the stated purpose is not accomplished within a reasonable period after the effective date of the notice."
- The landlord and tenants of a manufactured home park "may establish and select the members of a park committee".
- A park committee, or, if there is no park committee, the landlord may establish, change or repeal rules for governing the operation of the manufactured home park.

Note: The Active Manufactured Home Owners' Society of BC (BCMHO) notes that they do not know of any functioning park committees in the province.

Appendix B – Organizations

Active Manufactured Home Owners Society
The BCMHO recognizes that "owners of manufactured homes situated on rented pads in manufactured home communities are home owners, renters and taxpayers. They face a unique situation with problems common to all three roles." The organization's priority issues include:

- *Just compensation, and less uncertainty, when a park is being closed or redeveloped.*
- *Issues related to MH park owners/managers restricting subletting or home sales, which reduces home values and sometimes prevents home sales altogether.*
- *Bad faith and abusive evictions by park owners.*

Park Owners Alliance

About 40% of manufactured community owners are members of the alliance. The MHPOA has a code of ethics for its members, acknowledging their responsibilities and influence as landlords.

For retrofits on park properties, MHPO members generally want to support this work, but their biggest concerns relate to costs: upgrading park electrical infrastructure is very costly, and park owners face uncertainty about whether they will recoup costs through increasing rents and fees, because they don't know if the Residential Tenancy Board will approve increases, and because the RTB will not allow upgrades to happen in phases.

Industry Association

The MHABC notes that several plants are exceeding the energy efficiency standards set out in CSA Z240MH, building homes that would meet BC Step code levels 3-4. In some cases this is an option that customers can select when buying a new home, at an additional charge.

The association's membership includes 25-30 retailers, 8 plants, 6-8 transporters and around 30 associate members. Their industry currently produces approximately 1000 new manufactured homes per year (this number has been declining since the 1980's because "they don't build land anymore").

According to the MHABC, new manufactured homes cost around $300 per square foot, which, though significant, is less than the average cost for site-built homes (~$500/square foot). New manufactured homes are built for either a "north" or "south" climate zone, and are labelled as such. Some new manufactured homes are being ordered with heat pumps, but a significant majority are still built with natural gas furnaces.

Appendix C - Retrofit Strategies in Detail

1. Major infiltration, leaks, and health and safety repairs.

In some cases, issues such as broken windows or unsafe structures or wiring must be addressed first.

Recommendations	*Challenges and cautions*	*Impacts and Comments*
• Weatherization and efficiency efforts only make sense on a reasonably safe and intact home • Repair leaks to avoid re-accessing newly sealed road barrier.	The vast majority of manufactured homes have at least 1 water leak.	*"You must have repair dollars, you WILL encounter issues!"*

2. Duct repairs and sealing

The vast majority of manufactured homes have forced air heating systems. Collapsed and damaged ducts are very prevalent – often caused during transportation.

Even when ducts are intact, they are usually poorly sealed; leaks send conditioned air outdoors (in most cases ducts are outside the envelope of the home).

Recommendations	*Challenges and cautions*	*Impacts and Comments*
• Check and seal interior registers with mastic and foil tape. • Use pressure pan test to determine the extent and location of out-of-sight leaks (registers with greatest pressure differential may need sealing from underneath). • Exterior duct sealing with fibreglass mesh tape and mastic. • Check crossover connection in double wide homes	• May have to cut into road barrier to access collapsed vents (quite time consuming). • An alternative may be to fill, close and seal off ducts, then remove furnace and install non-central heating. • Sometimes cameras or mirrors work, but sometimes access is very limited.	• In testing, 40-50% of total home leakage is often from the ducts. • *"This is the top thing in manufactured homes; they will notice a difference."* • Some American utilities run programs just going from house to house doing duct sealing.

3. Other draft proofing/weatherization

Sealing other penetrations in the building envelope is also hugely impactful in manufactured homes.

Recommendations	*Challenges and cautions*	*Impacts and Comments*
Most common significant leaks are around hot water tank, tub, under sinks, and locations of previous renovations. Spray foam for small leakages. Blocking and spray foam for larger holes.Thermal cameras can help locate leaks. Blower door tests can determine initial leakiness and measure improvement.	Lack of visual access in belly cavity makes this more challenging.	*The reduction in leakage from weatherization in a manufactured home is typically double the improvement in a typical single detached home.*

4. Repair road barrier and insulate floor (and possibly attic)

When combined with air sealing and duct sealing, this will significantly increase comfort and thermal performance.

In some cases (often double wide homes), adding insulation to the attic is relatively easy. But often the attic space is too shallow; floor insulation has a significant impact on energy use and comfort.

Recommendations	*Challenges and cautions*	*Impacts and Comments*
• Road barrier repair, using tyvek and tape or actual road barrier material. • Blown in fibreglass insulation is most cost effective (and hydrophobic). • Sprayfoam is effective, but more expensive, and you must first remove road barrier and repair plumbing. • Roxul is effective and fire resistant, but expensive. May be the most suitable option for insulating under an addition.	• Difficult work in a small and dirty space: "it's not for the faint of heart" • Consider adding water line insulation because crawl space will be colder. • Holes in floor, ducts and road barrier **must** be sealed first. • Consider additions, which are often uninsulated.	Road barrier is not supposed to be part of envelope, but does have effect on blower door results. Possible consideration of creating an insulated crawl space. (Building code is moving to conditioned crawl spaces for other types of homes). This would allow easier access to pipes and ducts, but there are few precedents.

5. Heat pump installation (Potential electrical panel upgrade or load share device)

Installing a heat pump represents a huge opportunity for efficiency improvements, better performance and comfort, added cooling, and fuel switching.

Recommendations	*Challenges and cautions*	*Impacts and Comments*
• Consider panel capacity. If necessary, replace electrical panel or install load management device. • Load calculation and duct assessment to determine if central or ductless system is optimal and determine whether supplemental heating is needed. • Plan for unit placement, considering noise and neighbours; heat delivery to the largest living area. -Install HP unit(s) properly. -Install supplemental heat if needed ("ENVI" plug in units recommended.) -Educate users.	• Never use a ducted system unless sealing is done. • Frequently ducts are undersized, so air static pressure can cause noise or exacerbate leakage with a ducted system. • Consider snow (add shelter if needed). • Consider sizing of unit in northern climates. • Ducted systems are hard to balance. -Ideal spot may be too close to neighbours; choose placement carefully, then run refrigerant lines. -Centrally ducted system may be more risky in a double wide.	*"We do mini splits constantly, they're quieter, cause less drafts, they're just great!"* If suitable, centrally ducted systems get heat and cooling to all rooms, and sometimes you can keep the existing furnace as backup heat source.

6. Ventilation

Adding ventilation when weatherizing will reduce moisture issues and improve health by improving air quality.

Recommendations	*Challenges and cautions*	*Impacts and Comments*
-Install a bathroom fan; add controls to have it run regularly through the day "(eg. 20 min/ hour) to provide whole house fan". -If necessary, can be installed on exterior wall.	Risk of over-ventilation: continuous ventilation may be excessive, as these are very leaky homes.	HRVs are not generally installed in manufactured homes. Ventilation will take care of windows fogging up.

7. Windows

There are "tons of poor windows out there", and residents really want them. They have the most aesthetic impact and improve residents' sense of comfort.

Recommendations	*Challenges and cautions*	*Impacts and Comments*
-In this setting, double pane may be ideal. -Follow building code for install (extra bracing may be required).	Windows are not cost effective upgrades – they won't actually pay themselves off. Structural and technical considerations for installation.	*"People will keep wanting them, but they're not justified in our program".* Windown only add ~R1.5/ extra pane. 23% of residents surveyed want window upgrades.

Some additional notes about retrofits:

- Many residents have already done some work to improve their homes' energy efficiency. (59% of resident survey respondents have already done some kind of upgrade.)
- There are a range of approaches to retrofits. Among survey respondents, 16% had done all their upgrades by themselves or with the help of a 'handyman', 20% had used a mix of DIY and contractors, and 60% had all the work done by contractors.
- BC's Community Energy Association hosted a webinar with Ecolighten, which describes many of these measures on manufactured homes, based on the learnings of the provincial Energy Conservation Assistance Program.

Appendix D – Costs and Impacts of Retrofits

Leak sealing, duct repairs and sealing, and other draft proofing measures
Estimated costs: $200-$2,000, depending on the condition of the home.

Annual cost savings and average payback period	**Energy savings and GHG reductions**	**Other impacts**
Propane: $90, 12 years Natural Gas: $30, 36 years Electric: $88, 12 years	Propane: 6 GJ, 0.3 tCO2e Natural Gas: 6 GJ, 0.3 tCO2e Electric: 5 GJ, 0.0 tCO2e	Potentially significant increase in health, security, comfort and dignity of residents.

Underbelly insulation:

Estimated costs: $3,000-$8,000, depending on the condition of the home and the type of insulation used.

Annual cost savings and average payback period	Energy savings and GHG reductions	Other impacts
Propane: $425, 13 years Natural Gas: $300, 18 years Electric: $550, 10 years	Propane: 20 GJ, 1.3 tCO2e Natural Gas: 20GJ, 1.1 tCO2e Electric: 17 GJ, 0.1 tCO2e	Improved comfort, better health from temperature regulation; reduced stress thanks to increased affordability through reduced heating load.

Heat pump installation and ventilation

Estimated costs: $6,000-$10,000, depending on the type installed.

Annual cost savings and average payback period	Energy savings and GHG reductions	Other impacts
Propane: $740, 11 years Natural Gas: $450, 18 years Electric: $860, 9 years	Propane: 35 GJ, 2.3 tCO2e Natural Gas: 35 GJ, 2.0 tCO2e Electric: 26 GJ, 0.1 tCO2e	Improved comfort, safety and peace of mind with climate control in hot and cold weather. Increased health from better air quality. Reduced stress from bill savings.

"The most rewarding work is in situations where people have no proper heating whatsoever; they have super high costs but can't afford a better system, so it makes a big difference in their lives: both more comfort and lower costs – like hundreds of dollars a month!" -HVAC contractor

Window upgrades:

Estimated costs: $5,600-$9,600, assuming 8 Energy-Star double-pane windows.

Annual cost savings and average payback period	Energy savings and GHG reductions	Other impacts
Propane: $110, 69 years Natural Gas: $75, 101 years Electric: $140, 54 years	Propane: 5 GJ, 0.3 tCO2e Natural Gas: 5 GJ, 0.3 tCO2e Electric: 5 GJ, 0.0 tCO2e	Improved comfort (reduced drafts and noise transfer); enhanced home security; aesthetic improvement may increase pride and dignity.

Appendix E – Retrofit Barriers in Detail

Characteristics of Manufactured Homes – Retrofit Barriers

Because the majority of manufactured homes in BC were built before energy efficiency was incorporated into the CSA Z240MH standard (when minimizing cost and weight were often prioritized), and because transportation adds an extra strain on these structures, there are some common issues relating to the structure of manufactured homes that limit what retrofits are possible, or how effective they may be.

At the same time, each manufactured home has its own quirks, including additions or renovations done to varying degrees of quality. Unlike many types of housing, manufactured homes are treated as personal property, and, like cars, they depreciate over time. This is one more layer to address when looking at what retrofits make sense and how cost and energy savings are justified.

Attic is often too shallow for adding insulation. "Underbelly" is very exposed (to temperature and rodents) and very hard to access (for repairs to pipes/ducts, or to add insulation). Typical 2*4 construction in older homes can complicate or even prevent installing heavier windows. Ducts are typically undersized and poorly sealed; duct collapse is prevalent. No clear specs for BC (and some not built to any code!)	*Retrofits can make a huge difference to a home's performance and integrity, but certain retrofits may not be feasible, and in all cases, contractors need training, skills, and awareness.*
Manufactured homes are "not always a pretty place" and retrofitting them is both hard on the body and requires training to be done correctly.	*"Not for the faint of heart." and "The contractor issue is real". Training for contractors on manufactured home retrofits (like underbelly and duct work) is important; so are creative contractor incentives!* *"Even if there was money available to pay for this, what contractor is going to take on a project to replace the insulation under one of these homes? No one wants to work on manufactured homes because they don't want to go under the house to do the repairs."*
Many manufactured homes have some kind of addition built on, and these are frequently not well insulated or sealed to the original structure, difficult to access, and sometimes not even safe (they are supposed to stand alone). Structural changes without an engineer's approval can compromise MH certification and any electrical must be done properly, with a permit.	*57% of survey respondents have additions on their homes. (Contractors also report that a majority do.)* *Deciding how to address additions is a tricky part of retrofit work in this setting. Encountering poorly built structures, or electrical work not done to code can put contractors in an awkward position, especially when the extra cost of addressing these issues may not be covered by rebates, and/or may not be affordable for residents.*

Many older manufactured homes are only equipped with 60 amp panels, or sometimes even just 30 amps. (Varies somewhat by region.) Panel upgrades may be extra costly or impossible because of underground infrastructure. Load management devices switches may help in some cases, but they require a variance from Technical Safety BC.	*Even if panel upgrades are possible (and costs can be covered), they may trigger concerns around park electrical capacity.* *Load-sharing devices require a variance from Technical Safety BC and are a significant added cost, not covered by rebates.*
Manufactured housing depreciates and other factors dictate the value of a home (eg. Park upkeep and management); housing may be precarious (eviction or preference).	*It may not make sense for a resident to pay for upgrades. Are there cases where upgrades should not be done?* *"I haven't seen the value of our houses going up on the market so I wonder what the point of upgrading is!"*

Comments & opportunities: *To deal with these unique structures, contractors may need specific training as well as specific incentives. Contractors could benefit from more clear specifications around this work in the context of BC.*

Manufactured homes may also need special treatment in retrofit and rebate programs and unconventional financing may be required to justify and support their retrofits.

Demographics and Attitudes of Residents – Retrofit Barriers

The demographic trends among manufactured home residents outlined in the report's context section generate a variety of retrofit barriers. These are the main barriers identified, related to residents' circumstances, understandings and attitudes:

Barriers	Comments & opportunities
Upfront costs (even with rebates) are a major barrier for manufactured home residents. Many people have low or fixed incomes or pensions; investing even a small amount in retrofits is not possible, even if it would save money down the road. Further, many have had poor experiences with accessing rebates for past renos.	***59% of survey respondents say upfront costs are a huge barrier and another 33% say they're a medium barrier.*** *"When living on a below poverty level income, covering the bare minimum of pad rent, utilities, groceries and travel is already quite difficult - there are no monies left over for clothing or other necessities and definitely not for renovations of any kind."* *14% also say access to rebates was "terrible".*
Concern around cost also extends to worries about future servicing costs.	"*Down the road maintenance costs are excessive. Apparently, I'm supposed to get the heat pump serviced every year, but the companies are using the opportunity to gouge customers. If the pump breaks down, I'm not in good shape because there's no insulation in the front and I would die of summer heat."*
Lack of knowledge and confidence about what retrofits would help or who to work with is another big concern. This can be due to limited capacity (eg. seniors, single parents), trust issues (from past experiences with contractors, or stories of others'), or a lack of MH specific resources (lack of knowledgeable contractors or ability to find them).	***69% say that a medium or huge barrier is being overwhelmed by figuring out what to do or who to work with.*** *"I worry that I will be taken advantage of by contractors as I was when I had my sundeck redone."* *"Often contractors don't know the building code that is specific to manufactured homes. It would be tremendously helpful to have access to a registry of contractors who have expertise in working on manufactured homes and are willing to work on a manufactured homes."* *"Good luck finding a trustworthy contractor!"*

Anecdotal evidence shows a mistrust of government and utilities, mistrust of programs offering support, and negative response to unexpected/unknown contacts are fairly common. Residents have often been subject to high sales tactics in the past.	*Both utilities report that encountering skepticism when promoting the ECAP program is a significant challenge: "Manufactured home Parks are the toughest segment."* *Resident survey comments include:* *"I feel that is up to the homeowner - not subsidized by more government spending."* "*The various types of ineptness, scams and frauds are SO high, its very frustrating trying to find anyone we can trust to do both a good job/trustworthy, affordable AND not disappear after the job is done."*
There are also misconceptions or lack of knowledge around heat pumps. Some have had poor experiences with bad retrofit installations and/or poor quality equipment.	*"Not sure a heat pump will heat this place when it gets really cold."* "*I have heard about problems with heat pumps not working in the winter and contractors not answering the call for help, also is there really a savings per month after such a large investment?"*
Low literacy and low digital literacy rates are higher among manufactured home residents, which limits the reach of online program promotion and makes complicated application processes particularly problematic.	*Resident: "I live in a seniors' park where most of the residents are not good at using online services or applications."* *BC Hydro survey: 13% of respondents did not have a computer at home.* *Contractors: "One concern I do have is wanting to help the elderly with their application. For example reaching out on their behalf, having a consent form for this would be great. I can't seem to get any info or updates on our clients application, which I understand due to privacy policies but maybe there could be a way around this. It could make the contractors, homeowners and the ESP operators' life easier."* *"Most ESP customers find the funding qualification process very misleading."*

Comments & opportunities: *Financial support that is extensive enough to bring retrofits in reach for manufactured home residents is critical. Guidance through the retrofit process is another key need. And support for equipment maintenance is worth considering.*

Strategies for making contact with residents to inform them about what retrofits would help and what support is available needs careful consideration.

Manufactured Home Community/Park Setting – Retrofit Barriers

The majority of manufactured homes in BC are in communities/parks. This makes them more affordable, but it also complicates the landscape for retrofits. It's extremely costly and complicated to move a manufactured home, so residents cannot easily relocate. The park owner and manager have a lot of control over what work can be done, and what investments are justified. Even in parks that are well-managed, well-maintained and supportive communities, park infrastructure limitations can create retrofit barriers:

Barriers	Comments & opportunities
Residents require approval from park manager or owner for retrofits that require permits. Park owners generally have control over major upgrades to homes through park rules and tenancy agreements. Park rules can include restrictions on renovations, landscaping, and other improvements; park owners may require homeowners to obtain park approval before starting work. Tenants are required to comply with park rules, and failing to do so could be grounds for ending a tenancy. Even in cases where permission is not explicitly needed, it is considered a courtesy to let the owner/manager know.	*Lease agreements vary widely. Technically, owners don't have authority unless there's a physical reason not to allow something, but the power imbalance complicates things.* *Park may have rules like a time limit for completion of exterior renos.* *Resident survey:* *31% say their park manager/owner is not at all easy to reach.* *15% say their interaction with park management during past renos was "terrible".* *62% say park rules restricting their options is either a major or a medium barrier to completing retrofits.* *"We are not allowed - said they would evict us."*
Park electrical capacity limitations – confirmed or suspected – are a major concern for park owners. Many parks are blocking all heat pump installations for this reason. The cost of park infrastructure upgrades can be huge, especially because electrical distribution infrastructure is almost always underground.	*Park owners don't know if they will be able to recoup costs through rent and fee increases, which are subject to RTB approval. RTB also does not allow phased upgrades (for one section of the park at a time).* *8.5% of parks represented in resident survey have banned heat pump installs (uncertain how prevalent this is overall).* *"Park owner has decided that nobody else is allowed to put in a heat pump."*

Space is limited between units, and noise considerations for neighbours affect siting options for heat pumps. Improper installation or poor technology may exacerbate the problem.	*"Definitely an issue!" Sometimes the "ideal" spot is not possible.* *Lack of care + awareness in choice of location could cause conflict in the community and erode resident and owner/manager support for future installations.*
Poor park management (eg. harassment and threats of eviction, or inadequate upkeep), and possibility of redevelopment can erode the value of homes in a park, compromise residents' motivation or ability to invest in their homes, and undermine the sense of trust or community that can make retrofit projects more accessible. In some cases, contractors may refuse to visit a park where they have been harassed by a manager.	*"I'm concerned that any reno's I do would be redundant. They may be a benefit to me now but as I cannot sell because no new tenants are allowed."* *"I worry that [the manager] could make an affordable renovation a complete fiasco. (Costing me more money, time and stress)."* *"If anyone crosses her, they are next to be evicted!"*

Comments & opportunities: *Addressing these barriers is complicated. First, technical installation considerations for heat pumps (noise and space) fall under the category of contractor training, specs, and accountability.*

To address electrical capacity limitations, park owners need support to make informed decisions (and not block retrofits unnecessarily), and they need financial support (or at least clarity) where upgrades are necessary.

The issue of poor management in parks requires improved processes for addressing complaints and support and education for park owners and managers. The possibility of parks being sold or redeveloped needs regulatory attention, especially given their importance in the affordable housing puzzle.

Big Picture Barriers

Finally, there are a range of barriers that are part of a larger context. These are considerations for policy and advocacy work to support retrofits in manufactured homes as well as other types of buildings:

Barriers	Comments & opportunities
Availability of contractors is a significant barrier (for reaching the level of retrofits needed for climate targets generally, and for manufactured home retrofits specifically). The fact that most manufactured homes are in rural areas exacerbates this problem. The contractor survey reveals many frustrations for contractors with income qualified retrofit programs; as this is important and impactful retrofit work, the rebate programs must work well for contractors!	*54% of residents surveyed say that a medium or huge barrier is that they can't find a contractor.* *"It seems the 'approved by rebate issuers' contractors are the most expensive and those with the longest waiting lists."* *"Finding contractors that understand the idiosyncrasies of a manufactured home and are willing to take on low value projects is difficult."* *Program designer: "There is an opportunity to make a big difference, but it's very involved. Building capacity & expertise might need creativity. "*
Alternate cheap fuel options can reduce the economic case for doing retrofits. And having a natural gas utility as a partner in retrofit programs may cause some conflicts of interest.	*Also, nearly all new manufactured homes are still being built with natural gas furnaces for primary heating, which undermines progress from retrofits.*
Parks being sold to corporate investors or redeveloped for other uses are both growing pressures. Both can be disincentives for park owners to invest in infrastructure upgrades or even general upkeep. These trends can undermine quality of life for residents, including diminishing their home values, limiting access to a park owner/manager, and obstructing approval for retrofits.	*"It's hard to know how much to invest in my home without knowing if the park will be redeveloped."* *The trend in the US is already strong: "Private equity investors, pension funds and sovereign wealth funds are buying up manufactured housing parks, which they view as reliably profitable investments."*[18]

Park ownership model broadly, like any housing-for-profit arrangement, leaves residents vulnerable.	*Many park owners and managers are excellent landlords. But increasing rental rates, flagging upkeep and aging infrastructure are common complaints.*
BC's electrical distribution extension policy, despite recent updates, still makes individual capacity increases tricky and potentially unfairly expensive.	*If an individual request triggers a larger system upgrade (like a transformer), the individual who triggered it pays, despite others also benefitting (and despite electrification as a provincial strategy).*
Stigma and bias against manufactured homes from municipalities, banks, and contractors hinders other barriers from being properly addressed.	*Historically, biased zoning has reinforced manufactured housing parks' isolation and location in less desirable land.* *Even today local governments often are eager to convert parks to what they describe as "higher and better uses," which frequently means evicting residents for commercial development or more expensive housing.*

Appendix F – Rebate and Retrofit Program Information

This Appendix includes details about the conditions to qualify for these programs, the process for applying, and the kinds of retrofits covered, including rebate amounts. It also includes some further discussion about the strengths and weaknesses of these programs.

Energy Conservation Assistance Program

The income qualification for the program is based on the number of people in the household:

NUMBER OF PEOPLE IN HOUSEHOLD (INCLUDING CHILDREN)	MAXIMUM HOUSEHOLD INCOME BEFORE TAX
1 person	$39,700
2 people	$49,500
3 people	$60,800
4 people	$73,800
5 people	$83,700
6 people	$94,400
7 or more people	$105,100

To apply, prospective participants must fill out an application, either through

BC Hydro: https://app.bchydro.com/powersmart/residential/ps_low_income/energy_saving_kits/esk/home
Or Fortis BC: https://www.cdn.fortisbc.com/libraries/docs/default-source/rebates-and-energy-savings-documents/rebates-for-homes/ecap-application-form.pdf
Alternatively, they may request that a paper application be sent to them by calling Ecofitt (the program delivery agent, which is a company owned by CLEAResult) at 1 833 455 9029.

Processing timelines are approximately 4-6 weeks for initial processing, then deployment of an initial evaluation, then, pending approval by the utilities, anywhere from 2-6 weeks for the contractors to be deployed and work to be completed

Utility Streams: Depending on the manufactured home's electricity provider and main heat source, it is processed either by BC Hydro or by Fortis BC, who approve which measures will be undertaken, fund the retrofit work, and 'claim' the energy savings for the programs. A home located in BC Hyrdo's electric service area and heated by electricity is processed by BC Hydro. Their retrofits include the installation of a heat pump. A home in Fortis BC's electric service area and/or heated primarily by natural gas is processed by Fortis BC and receives insulation and ventilation, but no new heating or cooling unit (since 2024). Homes heated by oil or propane can receive insulation and ventilation retrofits (processed by their electricity provider), but they do not currently qualify for heat pumps.

A major challenge with a program funded through the utilities is that fuel switching represents a conflict of interest for Fortis BC (at least outside of their electric service area). Fortunately, Fortis is incentivized to fund increases to energy efficiency and this is a positive effect of the program. Already, legislation in 2024 restricted Fortis from installing high efficiency natural gas furnaces as part of the program. ECAP should be continued and expanded, and alongside this, the province should review Fortis' role as a provincial utility through the lens of provincial electrification and emissions reductions objectives.

Energy Savings Program

Program Qualification

Household income levels are determined based on combined pre-tax annual income, and different income levels qualify for different coverage (percentages of total cost and/or maximum coverage amounts). The overall maximum coverage from the ESP program is up to $44,900 and up to 100% of costs covered.

Below is a chart summarizing the income qualification for each level. Note that the income qualifications for ESP are higher than they are for ECAP (around 18-55% higher for levels 1 and 2), which means broader eligibility.

Rebate coverage is based on the combined income of all adults in your home and how many people live in your home, including adults and children.

Number of people living in your home (including adults and children)	Combined pre-tax annual income of all adults in your home (excluding dependants):		
	Income Level 1	Income Level 2	Income Level 3 (NEW)
1 person	$47,007	$61,697	$99,891
2 persons	$58,522	$76,810	$124,358
3 persons	$71,945	$94,428	$152,884
4 persons	$87,350	$114,647	$185,620
5 persons	$99,072	$130,032	$210,528
6 persons	$111,735	$146,653	$237,438
7 or more persons	$124,402	$163,277	$264,353

• Income level 3 only includes heat pump rebates for homes switching from natural gas, propane, or oil space heating.

Besides the income qualification, ESP has other eligibility criteria. The home must:

- Be a year-round primary residence that is at least 1 year old.
- Have a total assessed value less than 1.23million.
- Have a residential utility account, and resident must pay their own energy bills.
- For renters, a landlord consent form is required.
- For manufactured homes, they must be: permanently fixed, sitting on a foundation and structurally complete with installed and connected plumbing, heating, electrical, water and sewer services; towing apparatus and axle must be removed. (Note: the vast majority of manufactured homes in BC do meet these conditions.)
- Upgrades must be installed by a program-registered contractor.

Application Process

First, applicants must complete pre-registration through the CleanBC Energy Savings Program participant portal. Once confirmed, they receive an eligibility code and opportunities report, outlining suggested upgrades. They then can choose a program registered contractor to do the work.

After completing the upgrade, the contractor will submit the rebate application and deduct the rebate from the final cost of the upgrade, invoicing the participant for only the outstanding amount of the program.

For income qualification, an **Endorsement Form** may be completed by a person with knowledge of a participant's financial situation, where they attest to their income meeting the program criteria. These persons may be a social worker or family services professional, health care professional, Indigenous government, Native Friendship Centre, housing provider, religious organization leader, counsellor, or employee of an organization with income-tested programs. The endorser form is located here.

Rebate Amounts

Upgrades covered include: heat pumps (with different amounts depending on what your current primary heating fuel is), hot water heaters, electrical service upgrades, insulation, windows and doors, health and safety, ventilation.

Overall ESP rebate amounts are as follows. Specific upgrade requirements and coverage amounts for each income level and application can be found here. Overall, the ESP prioritizes fuel switching and rebate amounts reflect this.

Upgrade	Available rebates	Rebate
You may be eligible to receive enhanced rebates that cover up to 100% of your home upgrade costs. Free energy coaching, virtual energy assessments, and support in multiple languages can help identify the home upgrades and rebates that are best for you.	Heat pumps	Up to $19,000
	Heat pump water heater	Up to $3,500
	Electric service upgrade	Up to $5,000
	Insulation (Income levels 1 and 2)	Up to $5,500
	Windows and doors (Income levels 1 and 2)	Up to $9,500
	Ventilation (Income levels 1 and 2)	Up to $1,600
	Health and safety	Up to $800

When considering how ECAP and ESP can be complementary, the most relevant specific upgrades are:

Heat pump upgrades: all rebates are for up to 100% of eligible upgrade costs, but to different maximums, based on the original primary heat source and participant's income level:

Upgrade	From oil to a heat pump			From natural gas or propane to a heat pump			From wood or electricity to a heat pump (no level 3)	
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3	Level 1	Level 2
Central ducted (or 3-head multi split)	$16000	$12000	$10500	$16000	$12000	$10500	$5000	$5000
2 head multi-split, or 2 single-head mini-split	$14000	$10500	$10000	$14000	$10500	$8000	$5000	$5000
Single-head mini-split	$10000	$10000	$10000	$7500	$5500	$4000	$5000	$5000
Air-to-water heat pump	$16000	$12000	$10500	$16000	$12000	$10500	$5000	$5000
Combined space and water heat pump	$19500	$16500	$14000	$19500	$16500	$14000	$8500	$8500
Electric service upgrade	$5000	$3500	N/A	$5000	$3500	N/A	N/A	N/A
Northern top-up	$3000/ $1500	$3000/ $1500	N/A	$3000/ $1500	$3000/ $1500	N/A	N/A	N/A

Electric service upgrade costs only qualify when accompanying an upgrade from fossil fuel primary water or space heating systems to heat pump systems. Coverage is up to 100% of eligible costs, up to a maximum rebate amount of $5000/ home for level 1, $3500/home for level 2, or $1500/ home for level 3.

Window and door upgrades: these are not currently included in ECAP. Coverage is up to 95% of eligible costs, to a maximum or $9500 per home and $950 per window (level 1), and 60% of eligible costs, to a maximum or $9500 per home and $950 per window (level 2).

Dual fuel heat pumps: Fortis provides rebates directly for their customers. ESP provides rebates for homes converting from tank propane (100% up to $15,000 for level 1 or up to $10000 for level 2), and for Pacific Northern Gas propane or natural gas customers (100% up to 11500 for level 1 or $6500 for level 2). PNG offers additional top ups: *Learn more about the PNG top-up.*

Appendix G – Other Financing Opportunities

The federal government's **Greener Homes Loan** program provides 10-year, 0% interest loans to Canadian homeowners for retrofits and renewable energy investments on their homes. Limitations of this program include the requirement for costly "home energy evaluations" before and after retrofit work is undertaken, and the delay of loan disbursement until after invoices have been paid, making this option inaccessible for owners who cannot afford to "float" the upfront costs of retrofits.

This program would be more useful to manufactured home owners if the deposit amount (received upfront) was increased, and if the program allowed recommendations from free energy coaching programs (such as Clean BC's service) to identify qualifying measures.

Property Assessed Clean Energy (PACE) financing provides access to long-term financing for energy efficiency and resiliency measures for owners and developers. PACE loans are repaid through an addition to property tax bills and are transferred from one owner to the next when properties are sold. BC's Roadmap to 2030 includes a goal to create a provincial PACE program, but so far only a few municipalities offer this. A provincial PACE program should be designed to ensure that manufactured home owners can qualify, even if they do not own the land on which their home sits. PACE is used extensively and successfully in the United States and it has broad support in BC.

On-Bill Financing refers to a loan made to a utility customer to pay for some form of energy efficiency improvements, which are repaid as a line item on their utility bill. Theoretically, the owner repays the loan using the savings from reduced energy costs and, once the loan is repaid, they realize net savings on their energy bills. The utility benefits from an overall decline in energy demand.
An on-bill financing pilot program through BC Hydro and Fortis BC began in 2012, but did not gain traction. This model is currently not getting much attention in BC, but there are many examples of interesting and successful on-bill financing programs. BC could explore how on-bill financing might be used in conjunction with provincial rebate programs, to finance costs that exceed rebate amounts.

Solar Assistance
Some creative programs in the United States are supporting manufactured home park residents to reduce their energy bills by installing solar panels in parks, in partnership with non-profits, using grant funding. The power generated is then used to offset residents' consumption and thus reduce their bills.[xl]

Appendix H – Permissions and Permits

Park Rules: Park owners generally have control over major upgrades to homes through park rules and tenancy agreements. Park rules can restrict renovations, and park owners may require homeowners to obtain park approval before starting work. Failing to comply with park rules could be grounds for ending a tenancy. However, changes to park rules must be deemed "reasonable in the circumstances". Rule changes should promote the convenience or safety of the tenants and/or protect and preserve the condition of the manufactured home park or the landlord's property. Rules must apply to all tenants in a fair manner and be clear enough that a reasonable tenant can understand how to comply. Tenants can file for dispute resolution if they believe a rule is unreasonable or violates their tenancy agreement or the Act.

As of April 2024, changes to park rules, including those related to upgrades, can only be made once a year, with a three-month notice period24. (But already, some park owners are seeking exemptions to this, in order to pass rules banning heat pumps.)

Permits: Major renovations must comply with local bylaws, the building code and health and safety standards. Permits may be required by

municipal governments for major renovations. Both licensed contractors and homeowners installing electrical equipment require electrical installation permits from Technical Safety BC.

Appendix I – Load sharing devices

From 2021 to 2023, the non-profit *Passive House Alberta* ran a multi-year project focusing on "optimized electrification": electrification of a building while maintaining the existing electrical service connection. Their 2023 report provides a helpful overview.

Some comments from electricians and HVAC installers:

- Where panel upgrades are not possible, load sharing is a great alternative;
- Almost all manufactured homes can accommodate load sharing devices;
- A typical manufactured home-sized heat pump unit only requires a 20 amp breaker;
- Often, a heat pump can be added to a home with 100 amp service without load sharing (even in cases of fuel switching);
- A manufactured home with 60 amp service can sometimes accommodate a heat pump without load sharing, depending on other loads; if necessary, a load sharing device can allow the heat pump to share a circuit with an electric range or dryer;
- Satisfaction with load sharing among customers is generally high;
- Not all electricians understand heat pumps/ HVAC; they may give misleading information to park owners. (Heat pumps and air conditioners are rated differently than other equipment and have special provisions in the national electrical code);
- **Technical Safety BC already reviews whether a heat pump installation is safe and within electrical capacity limits in order to issue a permit for this work**.

Appendix J – Resident-Owned Communities

Typically, the cooperative owns the entire community, including the land, amenities, infrastructure and facilities, but the residents continue to own their own homes. The members vote on major decisions and elect a board of directors to handle the day- to-day operations. The Board may choose to hire a professional management company to handle operations and bookkeeping, especially if the community is large.

In the face of pressures to evict residents for commercial development or more expensive housing, or to let Parks be used as profitable private investments, this model provides an intriguing alternative. "MHROCs are one of the few sources of unsubsidized naturally occurring affordable housing in the country not subject to market-based rent increases."[32]

Communities usually need economic, political and technical support; in the United States, an organization called ROC USA provides low-cost loans to resident cooperatives to buy land and make needed capital improvements such as upgrading water, sewer and electric systems. Their network of regional housing experts then works with communities for at least a decade to develop and sustain their ability to manage their parks. Over three decades, no ROC USA community has ever defaulted on a loan or sold their park.

Many states have adopted laws that help residents purchase the manufactured home parks where they live. BC could consider following suit.

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